

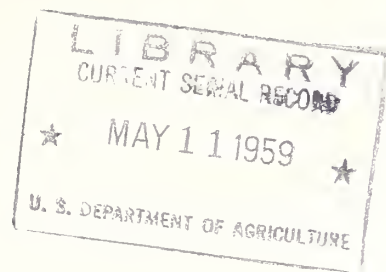




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Family Purchases
of selected
FROZEN FRUITS
and **VEGETABLES**

MARKETING RESEARCH REPORT NO. 317
U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
MARKETING RESEARCH DIVISION
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PREFACE

This study was carried out under authority of the Agricultural Marketing Act of 1946. It is part of a broad program of research designed to expand markets for farm products.

A basic purpose of this report is to compare data from the 1955 Household Food Consumption Survey (USDA) with information purchased from the Market Research Corporation of America--the two sources available. Since Household Food Consumption Surveys are conducted intermittently, a similar comparison will not be possible prior to the early 1960's. HFCS data were obtained from summary reports published between December 1956 and January 1958.

Different methodologies are used by the two sources in obtaining data. Likewise, the type of information available varies. Analysis of differences in method and findings is of importance to workers in this field. Also, where similar relationships are indicated, a broader subject matter coverage is made possible.

This study is concerned with discovering demand relationships which are not subject generally to wide short-term fluctuations. The year 1955 serves this purpose as effectively as later years. In addition, the report aims toward the future--providing the basis for more effective projections of future demand for these products. Full use of data from both sources is required for that goal.

Loy Sammet and Robert Reed, Giannini Foundation, University of California, Harvey Hutchings, Oregon State College, and Sam Barton, Market Research Corporation of America, offered valuable suggestions in the development of this report.

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April 1959

FINDINGS

What family characteristics appear to be related to the purchasing of frozen fruits and vegetables?

During 1955 higher-income families tended to buy more frozen fruits and vegetables than lower-income families bought. Among urban families, average annual purchases appeared to rise with income at a rate which was only slightly less than proportionate to the increase in income level. Purchases among rural families also rose with income, but at a slightly faster rate.

This general pattern of changes in average purchases and family income level applied to most of the individual frozen fruits and vegetables under study. Percentage changes in average purchases by families of varying incomes tended toward uniformity, even though the actual quantities of individual products purchased differed widely. Frozen snap beans and lima beans showed the greatest variations from this general pattern for frozen fruits and vegetables. (Average purchases of frozen snap beans increased with higher income at a faster rate than the average for all the items, lima beans at a lesser rate.)

Urban families bought more commercially frozen fruits and vegetables than their rural counterparts. Rural families with incomes over \$5,000 purchased about nine-tenths as much of these frozen products as urban families in the same income category. Differences in urban and rural family purchase rates broadened markedly, however, in successively lower income groups.

Regional purchase rates also varied widely. Families in the Northeast (New England and North Atlantic States) purchased the largest average quantities of most frozen products. Purchase rates in the Western and East North Central regions also tended to be high.

Considerable difference in regional purchase rates was found. The proportion of families in each income group differed among regions. Likewise, the numbers of urban and rural families varied. However, for numerous products, regional variations in purchase rates exceeded those attributable to income or urbanization factors alone. Such differences in regional family purchase rates reflect the influence of other demand factors--such as food preferences, and comparative availability and prices of fresh, frozen, and canned foods.

These three general considerations--family income, urbanization, and regional differences in buying habits--reflected the influence of other elements affecting purchasing of frozen fruits and vegetables--such as home food-processing activities, and availability of refrigerated and freezer storage in the home. Also, purchasing families tended to have fewer family members than nonbuying families.

What changes, if any, have occurred in the levels of family purchases of these items?

A comparison of annual average purchase rates of urban families during 1952 and 1955 was made for 7 frozen fruits and vegetables. Included were frozen green peas, lima beans, snap beans, spinach, broccoli, cut corn, and strawberries. Average annual purchases of each item by all families combined were higher during 1955.

Increases in average purchases by all urban families occurred even though there were no major changes in the percentage of families purchasing these frozen foods during 1952 and 1955. Buying families, however, bought larger quantities during 1955. Average purchases of these 7 products by buying families in 1955 were about 6 to 35 percent greater than in 1952.

The national pattern was reflected in each region. With few exceptions, buying families in each region purchased larger quantities during 1955. Similarly, minor changes were noted as to regional percentages of families purchasing.

Can these changes be related to income or residence of consumers?

When average purchases by all urban families were analyzed by (1) percentage of families purchasing and (2) average purchases per buying family, changes between 1952 and 1955 in these two elements appeared to be consistent with income-purchasing patterns found during 1955.

The percentage of urban families with \$3,000 to \$5,000 incomes purchasing individual frozen fruits and vegetables during 1955 was about the same as that found among urban families with more than \$5,000 income. The percentage was markedly less for urban families with incomes under \$3,000.

During both years a large portion of urban families were receiving more than \$3,000. Therefore, changes in urban family income levels between 1952 and 1955 may have had relatively little effect upon the percent of families purchasing those frozen foods.

In contrast, average purchases of urban buying families (unadjusted for family size) with incomes under \$3,000 and from \$3,000 to \$5,000 were approximately the same during 1955. Buying families with incomes over \$5,000 purchased significantly larger quantities. From this pattern it would appear that rises in urban family incomes are accompanied by increases in average quantities purchased by buying families to a greater extent than by increases in the percentage of families purchasing.

Changes in family income between 1952 and 1955 point the direction in which urban family purchase rates moved during those years. Income changes, however, would not explain the extent of such changes. Creation of new buying habits, relative changes in prices, and other factors played important roles.

Do general patterns or relationships exist which may be useful in projecting potential developments in this market?

Urban family purchases, by income, followed relatively firm patterns. Income-purchasing patterns were similar for most of the frozen fruits and vegetables under study. Distinct and different patterns were found for income and (1) percentage of families purchasing and (2) average purchases per buying family.

Relationships between income and percentage of families purchasing tended to be similar in each region. In contrast, relationships between income and average purchases per buying family varied by regions.

Rural family purchases, by income, assumed less distinct patterns, and these differed from relationships found among urban families, particularly in regard to average quantities purchased per buying family. Also, rural income-purchasing patterns for individual frozen fruits and vegetables differed more widely.

These income-purchasing relationships provide a tool for evaluating potential impact of changes in family income level upon demand. They are ratios, however, and will not provide information as to potential changes in basic levels of demand upon which such ratios develop.

Demand for frozen fruits and vegetables is growing. Factors, other than income, affecting demand in 1955 were reviewed for implications as to future changes in basic demand levels. As in most dynamic situations, some factors implied relative stability, and others bore potentials for exerting strong influence upon increasing demand for these products.

In 1955 over 90 percent of housekeeping households, both urban and rural, had mechanical refrigeration facilities. A large and increasing number of families had home freezers or other facilities adequate for longer storage of frozen foods. Retail food stores with freezer storage facilities may have handled as much as 90 percent of total retail food sales. These are among the factors which would tend toward increasing stability in demand.

If stability in purchasing patterns were to be assumed, it would appear that population growth, shifts from farm to nonfarm living, and projected long-range rises in family income would constitute major sources of expanding overall future demand by families for frozen fruits and vegetables. Projection of trends during recent years in these areas alone would indicate the possibility of substantial increases in demand.

For numerous frozen fruits and vegetables, the percentage of families purchasing was low. Also, buying families tended to purchase small quantities during 1955. Regional purchasing levels varied widely. These factors indicate that purchasing patterns have not become inflexible. Each provides a potential avenue for market expansion.

Changes in merchandising, pricing practices, and technology also are potential sources of increasing demand for frozen fruits and vegetables. Other considerations--both economic and noneconomic--may affect demand in either a positive or negative manner.

FAMILY PURCHASES OF SELECTED FROZEN FRUITS AND VEGETABLES

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BACKGROUND OF STUDY

Commercial freezing constitutes an increasingly important outlet for fruits and vegetables. During 1955 the commercial pack of these frozen products (excluding citrus juice concentrates) approximated 1.8 billion pounds (frozen weight). This was equivalent to about 11 pounds per capita (United States civilian population). The 1955 pack was the largest to that date and exceeded the pack of 1950--only 5 years earlier--by almost 740 million pounds, or 70 percent.

During 1955 estimated civilian consumption per capita of canned fruits, juices, and vegetables was around 80 pounds (canned weight). Consumption of all fresh fruits and vegetables, excluding melons, potatoes, and edible dry beans, was about 206 pounds (farm weight). Although frozen products account for only a small portion of total fruit and vegetable consumption, they represent large segments of the market for perishable commodities which can be frozen.

Postwar gains in frozen food production have been paralleled by adjustments in agricultural production and marketing of fruits and vegetables which can be processed effectively in frozen form. The scope of these changes raises questions as to the potential expansion of this industry and its implications to the farm producer, processor, marketer, and consumer. This study is one of a series concerned with appraising the effects which increasing sales of foods in frozen form may have upon marketing practices and costs.

To gain insight into these questions, it has been necessary to evaluate each of the major outlets for frozen fruits and vegetables--retail, institutional, and food manufacturing (1, 2, 7, 8, 9). 1/ Of these, the retail outlet looms largest although its significance varies among individual products.

About two-thirds of the frozen vegetables and one-third of the frozen fruits are packed in containers of 1 pound or less. The bulk of these so-called retail-size containers is sold through retail food stores and consumed in the home. Therefore, analysis of family purchases will provide an indicator of the retail market--the dominant single outlet for commercially frozen fruits and vegetables.

1/ Underlined figures in parentheses refer to items in the Literature Cited, p. 109.

Analysis is based primarily upon family purchases and usage, during 1955, of 10 leading frozen fruits and vegetables. Included are strawberries, other berries, peaches, asparagus, green peas, lima beans (including fordhooks), snap beans, spinach, broccoli, and cut corn. Frozen citrus products were excluded since detailed information on family purchase rates and consumer characteristics is published by the U. S. Department of Agriculture in cooperation with the citrus industry. 2/

PURPOSE OF STUDY

Specifically, this study aims to provide answers to the following questions concerning the retail outlet:

1. What family characteristics appear to reflect the economic and social factors affecting the purchasing of frozen fruits and vegetables?
2. What changes, if any, have occurred in the levels of family purchases for these items?
3. Can these changes be related to income or residence of consumer?
4. Do general patterns or relationships exist which may be useful in projecting potential developments in this market?

Answers to these questions shed light upon recent expansion of the market for frozen fruits and vegetables and provide indicators as to possible future developments in this field. To the extent that such information assists agricultural producers and marketers in their evaluation of marketing strategy and related problems, the immediate goal of this study will have been accomplished.

A second major objective was to create a base of information and methodology which will serve as a research tool for development of more advanced studies concerned with projection of future demand for frozen fruits and vegetables and other foods. For this reason, data, in some cases, have been presented in more detail and directed toward the market analyst to a greater degree than would have been required to meet the immediate objective only.

This study is contributory, under both objectives, to research conducted under the Western Agricultural Economics Research Council's regional project WM-17, and is linked closely with other work on the marketing of frozen fruits and vegetables under way at the University of California, Oregon State College, Washington State College, University of Hawaii, and the Agricultural Marketing Service, U. S. Department of Agriculture.

2/ For examples, see U. S. Dept. Agr. (10, 11).

SOME RELATED STUDIES

This study broadens the work by the U. S. Department of Agriculture in this field. For example, an earlier report (3) covering urban family purchases during 1952 of 7 major frozen fruits and vegetables provides a benchmark for measuring changes in purchasing patterns from 1952 to 1955.

Intermittent surveys on household food consumption 3/ provide information as to relationships between family income and other factors and usage of all foods, including frozen products. Such surveys cover all foods consumed by households during a week in the spring, and the sources of the foods. A relatively complete picture of relationships and competition between food items and sources, at a single point in time, is obtained from these surveys.

METHODOLOGY

Sources of Data

Information on annual and quarterly purchases, supplied by a national consumer panel, provided the primary basis for this report. These data were obtained under contract from the Market Research Corporation of America (MRCA). A second major source of information was the 1955 Household Food Consumption Survey of the U. S. Department of Agriculture. Since data from these two sources were used concurrently in analysis, consideration should be given to the consistency of the statistics obtained from each source and the variations in methodology employed in their development.

National Consumer Panel

Information on family purchases of 10 frozen fruits and vegetables was obtained from the National Consumer Panel of MRCA. Annual purchase data were separated into the following regional, urbanization, and income classifications: 4/

(a) Regions or divisions: (1) Northeast--including New England and Middle Atlantic; (2) East North Central; (3) West North Central; (4) Southeast--including South Central and East South Central; (5) West South Central; and (6) West--Mountain and Pacific. States comprising these regions are given in the appendix.

(b) Urbanization: (1) Urban and (2) rural residence (including population in towns of less than 2,500 persons).

3/ For example, see Clark, Murray, Weiss, and Grosmann (5); provides data for 1948. See also 12 reports (12 to 23) of the Household Food Consumption Survey, 1955, U. S. Dept. Agr.

4/ Additional or different classifications are available, but were not purchased from MRCA for this report.

(c) Income: (1) Under \$3,000; (2) \$3,000 to \$5,000; and (3) over \$5,000.

Within each of these classifications, information was obtained as to numbers of families buying, average quantities purchased, and prices paid. Average sizes of buying and nonbuying families also were determined.

Quarterly average purchase rates were separated by region only. Data as to average size of transactions and prices paid also were obtained on a quarterly basis.

The source of family purchase rates ^{5/}--The National Consumer Panel of MRCA--is a sample of the universe of all "households," as defined by the Bureau of the Census, which meet the following conditions:

1. Families lived in one dwelling unit for at least 6 months during the year.
2. Cooking facilities were available in the dwelling.
3. The household did not include customarily more than 4 paid boarders.

The National Consumer Panel consisted of 5,538 families and 20,798 family members. Numbers of families and family members in each statistical cell are shown in table 1.

Size of household (family size) is based upon numbers of persons in residence in the dwelling unit. Family income is net money income before income taxes and other deductions of the primary (reporting) family group in the household. Such incomes may include earnings of one or more members of this family unit. Income reported for 1954 was used for 1955 purchase evaluations.

Members of the MRCA panel maintain purchasing diaries for many food and nonfood items. (Frozen fruits and vegetables represent relatively minor product groups.) Purchase information is summarized weekly and forwarded to MRCA.

1955 Household Food Consumption Survey 6/

The following general categories of information from the 1955 Household Food Consumption Survey were used in the development of this study:

1. Percentage of households using and average quantities used during a week in the spring, 1955.

^{5/} Families in the National Consumer Panel may be described more accurately as "housekeeping households." The term "family" is used editorially in this report to signify MRCA data and "housekeeping households" is used in connection with information from the 1955 Household Food Consumption Survey.

^{6/} For details, see basic reports (12 to 24), or for a general discussion see Burk and Lanahan (4).

Table 1.--Distribution of national sample of families and family members, by region, income, and urbanization, 1955 1/

Region and income <u>2/</u>	Urban		Rural		Total	
	Families	Persons	Families	Persons	Families	Persons
Northeast: <u>3/</u>						
Under \$3,000	125	330	50	165	175	495
\$3,000 - \$5,000	431	1,646	94	360	525	2,006
Over \$5,000	374	1,424	68	271	442	1,695
Total	930	3,400	212	796	1,142	4,196
East North Central:						
Under \$3,000	72	182	68	206	140	388
\$3,000 - \$5,000	302	1,168	82	361	384	1,529
Over \$5,000	341	1,329	73	275	414	1,604
Total	715	2,679	223	842	938	3,521
West North Central:						
Under \$3,000	48	113	85	240	133	353
\$3,000 - \$5,000	117	421	89	351	206	772
Over \$5,000	115	434	56	258	171	692
Total	280	968	230	849	510	1,817
Southeast: <u>4/</u>						
Under \$3,000	146	553	330	1,373	476	1,926
\$3,000 - \$5,000	224	907	182	763	406	1,670
Over \$5,000	196	792	107	493	303	1,285
Total	566	2,252	619	2,629	1,185	4,881
West South Central:						
Under \$3,000	119	414	164	602	283	1,016
\$3,000 - \$5,000	165	633	78	325	243	958
Over \$5,000	111	407	80	318	191	725
Total	395	1,454	322	1,245	717	2,699
West: <u>5/</u>						
Under \$3,000	135	323	54	192	189	515
\$3,000 - \$5,000	338	1,196	100	430	438	1,626
Over \$5,000	338	1,214	81	329	419	1,543
Total	811	2,733	235	951	1,046	3,684
United States:						
Under \$3,000	645	1,915	751	2,778	1,396	4,693
\$3,000 - \$5,000	1,577	5,971	625	2,590	2,202	8,561
Over \$5,000	1,475	5,600	465	1,944	1,940	7,544
Total	3,697	13,486	1,841	7,312	5,538	20,179

1/ Families are defined on page 10. Persons are members of families so defined.
2/ Net family income before income tax and other deductions.
3/ New England and Middle Atlantic regions.
4/ South Atlantic and East South Central regions.
5/ Mountain and Pacific regions.

a. Purchased fresh, commercially frozen, and commercially canned fruits and vegetables.

b. All fresh fruits and vegetables. 7/

2. Availability of mechanical refrigeration and freezer facilities (including rented lockers).

3. Percentage of households with home production and average quantities produced for home use during 1954.

a. Fresh fruits and vegetables.

b. Fruits and vegetables produced at home and canned or frozen at home.

4. Home frozen and canned from all sources (22).

Data were separated by region, urbanization, income, and household size.

The 1955 Household Food Consumption Survey collected information as to consumption of all foods from all sources during a week in spring (April-June) 1955. This season was chosen since spring was a 3-month period most like the average for the year for consumption of most foods.

Data were obtained by personal interview from a total of 6,060 households. Of these, 4,605 households constituted a national self-weighting probability sample. Information from a supplementary sample of 1,455 farm households was taken to assure further reliability of data on farm consumption patterns.

Basic household groupings were made in the following categories: 8/

Region:	1954 money income of family after income taxes:
United States	Under \$1,000
Northeast	\$1,000 - \$1,999
North Central	\$2,000 - \$2,999
South	\$3,000 - \$3,999
West	\$4,000 - \$4,999
	\$5,000 - \$5,999
Urbanization:	\$6,000 - \$7,999
All combined	\$8,000 - \$9,999
Nonfarm	\$10,000 and over
Urban	
Rural nonfarm	
Rural farm	

7/ Fresh fruits and vegetables obtained from all sources, including those produced at home or received as gifts or pay. Home-processed items also are listed in this category since these frozen or canned products originally entered the kitchen in fresh form.

8/ For detailed numerical breakdown of households, see 1955 Household Food consumption Survey (12). States comprising the 4 regions are given in the appendix.

In this survey an "economic family" is a person living alone or a group of persons who live together and draw from a common fund for their major items of expense. The data on income and food expenditures away from home are for primary economic families and exclude guests, boarders, hired help, and others. If more than one economic family was living in the unit, the one that maintained the dwelling unit was the primary one. But the detailed data on food consumption at home include all food consumed in the household, defined as one or more persons sharing food supplies and including guests, boarders, secondary families, and hired help. At least 1 person had 10 or more meals from household food supplies during the 7 days preceding the interview.

Data for the 1955 Household Food Consumption Survey were obtained by trained interviewers with detailed food lists. Since the food consumption data pertained to the 7 days preceding the interviews, householders would recall these details reasonably well during the interview.

Comparison of Data Sources

It is not the purpose to develop a thorough comparison of statistics obtained by the recall method using a detailed food list and the record-keeping approach. ^{9/} Obviously, the recall method is adaptable to a short-time span. Information on family food usage or purchases during longer periods requires a record-keeping technique.

Errors in memory constitute an inherent source of bias in data collected under the recall method. Similarly, record keepers may overstate or understate purchases for the same reason. The act of keeping detailed food records may cause changes in the purchasing behavior of the diarist. The possibility of a biased response resulting from assumed prestige or status associated with reporting or not reporting an individual item is present under either method. In the 1955 Household Food Consumption Survey the response rate of eligible households was 89 percent. However, when a 2-hour average interview time is involved, the possibility of sampling bias, albeit slight, is ever present. In contrast, because of dropouts it is extremely difficult to maintain a continuous panel on a random, probability basis even if it is started that way (4).

Data obtained under either the recall or the record-keeping method should be analyzed primarily for evidence of systematic variations. These data are subject to errors associated with both sampling and reporting. Sampling variations are subject to study, but the extent of reporting error cannot be measured with available information. Furthermore, it is known that the combined effect of reporting error and sampling variation differs among statistical cells and

^{9/} For such a comparison, see Murray, Blake, Dickens, and Moser (6).

food items (4). For this reason, efforts were made in this study to compare data gathered from the two sources for the existence of similar response patterns to provide a check from another sample of a related universe.

Search for linkages between data obtained by the record-keeping and recall methods was implemented by the fact that, within given budgetary limitations, each method is better suited to provide information useful for analysis of different aspects of family demand for foods. Information from one source often complements that obtained from the other. A key problem is the development of adequate linkages to permit such interchanges in use of data. This need may be illustrated within the framework of family usage of frozen fruits and vegetables.

The 10 frozen fruits and vegetables under study are storable products which are purchased infrequently during the year and generally in small quantities. When used within a given week, a specific frozen item appears to be served at one or two meals, in most cases. Amount served is influenced by package size. Also, seasonal usage patterns are not clearly defined. These factors dictated the primary use of data obtained by the record-keeping method.

Annual purchase data provided valuable information as to (1) percentage of families using the items, (2) quantities consumed per using family, and (3) average consumption by all families. 10/ In regard to percentage of families using, the 7-day consumption period will not include many infrequent users. Also, these 7-day data will show comparative uniformity among all groups of users as to average quantities consumed per using family. Although a family may use a product only once a year, usage during the week within which this occurred would be similar in level to that of the family which used the item every week.

As a measure of average consumption by all families, the value of data from the Household Food Consumption Survey is dependent upon the extent to which the survey period is representative of the entire year. In the case at hand, existence of a seasonal usage pattern was indicated. If the survey period were representative, and no sampling or reporting error existed in either set of data, information on average consumption by all families from either source (record-keeping or recall) should be closely related.

In turn, information from the Household Food Consumption Survey (the recall method) possessed advantages in other respects.

1. These survey data provide the basis for comparison of competitive food products at a given period of time. Data were not limited to specific categories of foods purchased, but were concerned with all foods used regardless of source--purchased, gift, home production, or other.

10/ Purchase patterns indicate probability that family purchases in a year closely approximate annual consumption of commercially frozen fruits and vegetables by housekeeping households.

2. Here were the most complete data as to use of frozen fruits and vegetables by rural families. Inclusion of the supplemental sample of rural farm households permitted more detailed treatment of the rural population segment and a view of dissimilarities in food usage patterns by rural nonfarm and farm households.

3. This survey also possessed more usable separations by income class and other categories. Availability of the supplemental sample of rural farm families in the Household Food Consumption Survey permitted a more detailed classification of usage data utilizing a sample of approximately the same size.

The comparisons above are concerned with adaptability of data from these two sources to a specific problem. The elements involved in an analysis for commercially frozen fruits and vegetables will differ from those for most other food categories. Therefore, the degree of adaptability of these data sources to similar studies for other foods also will vary. Furthermore, use in this type of study does not represent the primary purpose for which either data source was developed.

These comments are not criticisms of either the record-keeping or the recall method of data collection. Rather, they are intended to point out basic differences in characteristics of data obtained by each method and the need for both types of data for detailed analyses of food consumption. In addition, they should illustrate clearly the value of efforts to link together these types of related data.

Measures of Family Purchases

Five measures are used in this study for analyzing family purchases of frozen foods. These include the following:

1. Average quantities purchased per family.
2. Average quantities purchased per family member.
3. Average quantities purchased per buying family.
4. Average quantities purchased per member of buying families.
5. Percentage of families purchasing.

Each measure provides information pertinent to specific questions. Their general similarity, however, requires a brief delineation as to actual comparability and limitations involved.

Average quantities purchased per family constitute the most general measure of such purchases. Comparisons over time show the extent of changes in purchasing levels. Since these figures are average purchases for all families--buyers and nonbuyers--they will not indicate whether shifts in purchase rates have resulted from changes in number of families buying or amounts purchased per buying family. They will measure, however, the combined effect of such changes.

Average quantities purchased per family member provides similar information except that adjustments are made for differences in average family size. This refinement assumes importance in comparisons among regional and family income groups. For example, in 1950, the size of the average western family was 3.11 persons, whereas the average southern family had 3.70 persons--almost 20 percent larger. 11/ Also, average family size tends to be larger with higher income, resulting, in part, from the fact that larger families include more working members.

This measure will approximate most closely civilian per capita consumption estimates for these products. However, considerable difference between these figures may be anticipated. Average purchases per family member in this report are concerned with household purchases only, whereas per capita consumption is based upon estimated total domestic disappearance of the product--a broader base than the retail pack alone. 12/

Average purchases per buying family and per member of buying families provide similar information for the buying segment only. These measures have extra significance in evaluation of purchase patterns for specialty products or other items with a limited number of purchasing families. Saturation of a limited market would be reflected in this measure, whereas it would tend to be masked under average family purchase figures.

Percentage of families purchasing is an important measure for frozen fruits and vegetables where, in some cases, buying families constitute a small portion of the total population. This guide provides information to the extensive development of the market, whereas quantities purchased by buying families indicate comparable changes in intensity. Therefore, evaluation of purchase rates may be handled effectively by linking the measures--percentage of families purchasing and average purchases per buying family. For each measure, however, it must be noted that in data based upon the National Consumer Panel (MRCA), a single purchase during the year will qualify the family as a buyer.

The five measures for family purchases of frozen fruits and vegetables are shown in tables 2 and 3. These data emphasize the importance of correlating intensive and extensive measures of the frozen food market rather than relying upon general averages alone. Comparable information on a regional basis is contained in tables 36 through 40. (Tables 36 to 56 are in the appendix.)

Presentation Guide

This report deals with 10 frozen fruits and vegetables, 6 regions and the United States, 5 measures of family purchasing responses, and more than 8

11/ Based upon 1950 Census data. Southeast includes South Atlantic and East South Central regions. West includes Mountain and Pacific regions.

12/ In this study attention has been given primarily to purchases per family. In any further studies, this author would shift emphasis to purchases per family member.

Table 2.--Ten frozen fruits and vegetables: Percent of families purchasing and average purchases per family, United States, 1955

Commodity and class	Families purchasing	Purchases per family	
		All families	Buying families only
	Percent	Pounds	Pounds
Vegetables:			
Green peas	45	3.7	8.3
Lima beans <u>1/</u>	36	2.1	5.9
Spinach	26	1.9	7.2
Snap beans	27	1.7	6.5
Broccoli	33	1.7	5.0
Cut corn	22	1.0	4.5
Asparagus	16	.3	2.0
Total	<u>2/</u>	12.4	<u>2/</u>
Fruits and berries:			
Strawberries	45	2.6	5.6
Other berries	12	.3	2.6
Peaches	8	.2	3.0
Total	<u>2/</u>	3.1	<u>2/</u>
Total	<u>2/</u>	15.5	<u>2/</u>

1/ Includes fordhooks.
2/ Data not available.

specific factors affecting present and potential levels of usage by households. With the mass of relationships and interrelationships involved, emphasis has been placed upon tabular and graphic presentation. Detailed data summaries in most cases are shown in the appendix.

The study is divided into three semi-independent sections: (1) Findings as to family purchase rates during 1955, 13/ (2) analysis of 8 major factors affecting usage of these frozen products, 14/ and (3) some implications of the considerations above to agricultural producers and marketers, and research workers involved in this or related fields.

13/ Based upon data from the National Consumer Panel of MRCA.

14/ Data obtained primarily from MRCA and the 1955 Household Food Consumption Survey.

Table 3.--Ten frozen fruits and vegetables: Average purchases per family member, United States, 1955

Commodity and class	Purchases per family member	
	All families	Buying families only
	<u>Pounds</u>	<u>Pounds</u>
Vegetables:		
Green peas	1.1	2.7
Lima beans <u>1/</u> .....	.6	1.9
Spinach .....	.6	2.3
Snap beans .....	.5	2.1
Broccoli .....	.5	1.6
Cut corn .....	.3	1.4
Asparagus .....	.1	.8
Total	3.7	<u>2/</u>
Fruits and berries:		
Strawberries .....	.8	1.8
Other berries .....	.1	.9
Peaches .....	.1	1.0
Total	1.0	<u>2/</u>
Total	4.7	<u>2/</u>

1/ Includes fordhooks.

2/ Data not available.

More specifically, the section on findings as to family purchase rates deals primarily with (1) percent of families purchasing, (2) average quantities purchased per buying family, and (3) average quantity purchased per family (buyers and nonbuyers). This section also includes a comparison of purchase rates for urban families during 1952 and 1955 which illustrates the nature of changes in family buying responses during this period.

In the second section, consideration was given to the following factors affecting usage of frozen fruits and vegetables: 15/

1. Family income.
2. Availability of frozen products in retail stores.

15/ Where appropriate, regional and urbanization factors are included in considerations of each listed element.

3. Availability of family refrigeration facilities--mechanical refrigerators and freezer storage.
4. Extent of home food production and use in fresh, home-frozen, and home-canned forms.
5. Usage of purchased fresh, frozen, and canned fruits and vegetables.
6. Pricing patterns for frozen products.
7. Average quantity per transaction of family purchases of frozen fruits and vegetables.
8. Seasonal purchase patterns for these frozen products.
9. Age, family size, and other characteristics of users and nonusers of frozen fruits and vegetables.

Efforts have been made to summarize data obtained in relation to each of these factors. Since only a single year is involved, analysis is concerned generally with determining the independent status of these considerations during 1955. In numerous instances, their position has sufficient clarity to warrant inferences as to their role in future demand for frozen fruits and vegetables. Determination of the position of other factors during 1955 will be of use primarily in establishing a benchmark against which future changes may be measured.

FAMILY PURCHASE RATES, 1955 16/

Percentage of Families Purchasing

What percentage of families bought frozen fruits and vegetables during 1955? Table 2 shows that the percentage of buying families in the United States ranged from 8 percent for frozen peaches to 45 percent for peas and strawberries. Performance for these latter products compared favorably with the 51 percent of all families purchasing frozen orange juice concentrates during April-September 1955 (10, 11). However, less than 1 family in 4 reported any purchases of frozen cut corn, asparagus, peaches, or berries other than strawberries.

The heaviest percentage of buyers appears to be located in the Northeast and the West. In contrast, buyers constitute the smallest percentage of the population in the South and West South Central regions (see table 36).

There are distinct regional variations in the percentage of families purchasing individual products. The two leading items, frozen green peas and strawberries, provide examples (table 4).

Although both frozen peas and strawberries were purchased by 45 percent of the families in the United States, regional variations ran from 29 to 65 percent for green peas and 37 to 52 percent for strawberries. In the West, for example, around 65 percent of families purchased frozen green peas, whereas only 38 percent bought frozen strawberries.

No data were obtained as to the percentage of families which bought at least one frozen fruit or vegetable during 1955. However, it is apparent that

16/ Data in this section is based entirely upon information obtained from the National Consumer Panel, MRCA.

Table 4.--Percent of families purchasing frozen peas and strawberries, by region and United States, 1955

Region	Families purchasing	
	Frozen peas	Frozen strawberries
	Percent	Percent
Northeast	53	52
East North Central	45	51
West North Central	41	50
Southeast	29	38
West South Central	20	37
West	65	38
United States	45	45

less than one-half of the families in the United States purchased any single product. This would indicate that nonusers still represent a significant base for market expansion.

Urban and Rural Families 17/

The relative proportion of urban and rural families in a region is a factor in regional differences as to percentage of families buying frozen fruits and vegetables. Generally, more urban than rural families were purchasers in all regions. Also, a lesser degree of regional variations in percentage of families purchasing was noted among the urban population.

An indication of the extent of differences between purchasing patterns for urban families and those for rural families was obtained by comparing the percentages of urban and rural buyers who reported purchases of the most widely bought single frozen fruit or vegetable (table 5). In most regions and buying groups, frozen green peas were the most widely purchased. In others, frozen strawberries and lima beans were in this position. Such a measure overstates the position of the nonbuyer to the extent that it excludes purchasing families who did not buy the most important item. However, in view of the general acceptance of the 3 items, this is not a major limitation.

As shown in table 5, the most widely purchased product in each region was bought by more than half of all urban families, except for the West South Central region, where purchases by 45 percent of urban families were indicated. In contrast, the most widely purchased items for the various regions were bought by 21 to 52 percent of rural families.

17/ Rural families include those living in unincorporated areas or cities of less than 2,500 persons. No breakdown was obtained as to rural farm or rural nonfarm families.

Table 5.--Most widely purchased frozen fruit or vegetable: Percent of urban and rural families buying, by region and United States, 1955 ^{1/}

Region	Urban families	Rural families	All
	Percent	Percent	Percent
Northeast	54	45	53
East North Central ...	59	29	51
West North Central ...	56	41	50
Southeast	52	21	39
West South Central ...	45	24	37
West	69	52	65
United States	51	28	45

^{1/} Most widely purchased item varies among regions and urban-rural categories.

The percentage of families purchasing each frozen product, by region, is shown in table 41. From these data, it is apparent that the percentage of families, both urban and rural, purchasing any individual product varied more widely among regions than would be indicated in the range shown in table 5.

Number and Location of Nonbuying Families

When estimates of percentage of families buying frozen fruits and vegetables (table 5) were related to numbers of households during 1955, an indicator was obtained as to the number and location of nonbuying families (table 6). Such estimates would tend to show the maximum possible number of nonbuyers, insofar as buying families not purchasing the leading product would be excluded.

From these assumptions, it would appear that as many as 24 million families may not have purchased frozen fruits or vegetables (excluding citrus juice concentrates) during 1955. Of these, over 15 million were urban families--over half of which were located in the Northeast and East North Central regions. More than one-third of the rural nonbuying families were found in the South. Sizable numbers of nonbuyers are to be found among urban and rural families in each region.

How many of these nonbuying families are potential customers? Consumer preferences and eating habits, ability to purchase, availability of home-produced foods, and other factors may be expected to reduce the number of potential consumers for almost any food product well below the total number of families. However, if the percentages of urban and rural families purchasing frozen fruits or vegetables in each region were to attain the levels reported

Table 6.--Ten selected frozen fruits and vegetables: Estimated maximum possible numbers of urban and rural nonbuying families, by region and United States, 1955 1/

Region	Nonbuying families		
	Urban	Rural	Total
	Million families	Million families	Million families
Northeast	5.1	0.7	5.8
East North Central	3.1	1.5	4.6
West North Central	1.2	1.1	2.3
Southeast	2.8	3.1	5.9
West South Central	1.6	1.3	2.9
West	1.8	.7	2.5
United States	15.6	8.4	24.0

1/ Developed by relating data shown in table 3 to estimates of family numbers as of January 1955 as developed by MRCA from Census data. Computational method would overstate probable number of nonbuyers--this is maximum possible number of nonbuying families.

in the West, the number of families purchasing would increase about 6.9 million. Of these, about 4.5 million would be urban families and around 2.4 million rural families.

Average Purchases per Buying Family

Converted into 10-ounce packages, average purchases per buying family in the United States during 1955 amounted to:

<u>Frozen product</u>	<u>Number of 10-ounce packages</u>
Green peas	13.3
Lima beans	9.4
Spinach	11.5
Snap beans	10.4
Broccoli	8.0
Cut corn	7.2
Asparagus	3.2
Strawberries	9.0
Other berries	4.8
Peaches	4.2

These figures represent average purchases for each commodity. For example, among the 45 percent of all families purchasing green peas, average purchases were 13.3 packages. Within the 8 percent buying frozen peaches, the average was 4.2 ten-ounce packages.

The average family bought frozen peas--the leading item--at a rate equivalent to slightly over 1 package per month. In contrast, asparagus was purchased about once per quarter. These figures indicate a relatively low purchase rate even among buying families. However, as indicated earlier, a single purchase during 1955 qualified a family as a buyer.

Regional differences in average purchases per buying family are shown in table 39. Regional average purchases ranged widely for each product and the deviations do not form a consistent pattern. The major exception to this was found in the Northeast where purchases tended to be heaviest. For 6 of the 10 products, average purchases were greatest in the Northeast. For a seventh, lima beans, the purchase rate was second only to that in the South.

While a greater percentage of all families in the West reported purchases of frozen foods, the levels of average purchases per buying family tended to be considerably less than those found in the Northeast and several other regions. Does this indicate that such an increase in percentage of families purchasing was achieved by bringing many infrequent buyers who purchase only small quantities into the market?

Average Purchases by Urban and Rural Buying Families

Urban buying families tended to purchase more frozen fruits and vegetables than their rural counterparts did. Average purchases per buying family for the United States are shown in table 7. Peaches appeared to be the only exception. Since purchases of this item were made by about 3 percent of rural families, the possibility of sampling error must be given consideration.

For detailed regional breakdowns of average purchases per buying family--both urban and rural--refer to table 44. Within each region, average urban purchases exceeded those made by rural families, with few exceptions. However, the extent of these differences varied widely among regions and within regions for individual commodities. These regional variations are shown in table 8.

Family Income and Average Purchases per Buying Family

Buying families with higher incomes tended to purchase greater quantities of frozen fruits and vegetables. As shown in table 9, urban families with incomes over \$5,000 purchased consistently more of each product, except frozen peaches, than families with incomes under \$5,000. Among urban families in lower income categories--\$3,000 to \$5,000 and under \$3,000--there appeared to be relatively little difference in average quantities purchased.

Table 7.--Ten frozen fruits and vegetables: Average purchases per buying family, urban and rural, United States, 1955

Frozen product	Urban families	Rural families
	<u>Pounds</u>	<u>Pounds</u>
Vegetables:		
Green peas	8.7	6.1
Lima beans	6.0	5.3
Spinach	7.4	5.1
Snap beans	6.7	4.4
Broccoli	5.1	4.3
Cut corn	4.5	4.2
Asparagus	2.5	2.5
Fruits and berries:		
Strawberries	6.4	5.0
Other berries	2.6	2.2
Peaches	2.9	4.1

Table 8.--Ten frozen fruits and vegetables: Purchases by urban and rural families, range of regional averages, United States, 1955

Frozen product	Urban families	Rural families
	<u>Pounds</u>	<u>Pounds</u>
Vegetables:		
Green peas	4.3 - 11.1	4.3 - 8.7
Lima beans	4.1 - 9.0	2.2 - 8.4
Spinach	5.0 - 8.3	3.0 - 8.7
Snap beans	4.6 - 7.9	1.4 - 7.2
Broccoli	4.0 - 6.5	2.8 - 5.1
Cut corn	3.9 - 5.9	3.1 - 4.6
Asparagus	1.9 - 2.8	0.7 - 3.5
Fruits and berries:		
Strawberries	3.8 - 6.4	4.3 - 6.9
Other berries	1.4 - 3.5	0.6 - 3.4
Peaches	2.3 - 5.9	2.4 - 8.4

Table 9.--Ten frozen fruits and vegetables: Average purchases per urban and rural buying family, three income classes, United States, 1955 ^{1/}

Frozen product	Urban buying families			Rural buying families		
	Under : \$3,000	to : \$5,000	Over : \$5,000	Under : \$3,000	to : \$5,000	Over : \$5,000
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>
Vegetables:						
Green peas	7.5	7.2	10.7	4.7	6.6	6.9
Lima beans	6.0	5.1	6.8	6.4	5.1	4.8
Spinach	6.5	6.9	8.0	3.8	4.1	7.0
Snap beans	5.0	5.5	8.1	2.7	3.6	6.9
Broccoli	4.6	4.6	5.7	5.0	4.4	3.8
Cut corn	3.5	3.9	5.4	3.7	3.9	5.0
Asparagus	2.0	2.2	2.8	2.0	2.2	2.6
Fruits and berries:						
Strawberries	5.4	5.4	6.2	3.8	5.5	5.5
Other berries	2.3	2.3	2.9	1.8	1.9	3.1
Peaches	3.1	2.8	3.0	4.4	3.4	5.0

^{1/} Net family income before income taxes and other deductions.

Likewise, rural buying families with higher incomes tended to purchase more of these frozen products than rural families with incomes under \$5,000. However, more variations were noted--particularly in the cases of lima beans and broccoli.

These figures would indicate that family income plays an important role in determining total demand for frozen fruits and vegetables. Furthermore, since changes in urban family income above the \$3,000 level appear to have relatively little effect in increasing the percentage of families purchasing these products (table 10), it is apparent that the overall effect of income may be measured primarily in quantities purchased--the intensive phase of the market. Increased income, of itself, will tend to result in purchasers buying more rather than in the adding of new customers, if the current purchasing pattern continues.

Detailed information on regional purchase rates of buying families--urban and rural--in the 3 income classes are contained in tables 45 and 46. Within each income category, the purchase rates found in the 6 regions vary widely. The extent of these spreads and their relationship to the United States averages are illustrated in the case of frozen green peas (table 11). With one exception, the highest regional purchasing rates for frozen green peas were more than double the lowest rates. Comparable ranges were found for the other frozen items.

Table 10.--Ten frozen fruits and vegetables: Percent of urban and rural families purchasing, by income, United States, 1955 ^{1/}

Frozen product	Urban buying families			Rural buying families		
	Under : :\$3,000 :	\$3,000 to : \$5,000 :	Over : :\$5,000 :	Under : :\$3,000 :	\$3,000 to : \$5,000 :	Over : :\$5,000 :
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Vegetables:						
Green peas	34	61	52	18	31	40
Lima beans	30	49	42	11	21	32
Spinach	22	36	35	5	9	14
Snap beans	21	36	37	5	11	13
Broccoli	26	44	43	9	14	30
Cut corn	18	30	27	9	16	18
Asparagus	12	15	21	2	4	13
Fruits and berries:						
Strawberries	33	62	53	19	33	41
Other berries	9	16	16	5	9	8
Peaches	7	10	10	1	3	6

^{1/} Net family income before taxes and other deductions.

Table 11.--Frozen green peas: Family purchases, United States average and range of regional averages, by income, 1955

Family income	Range of regional average purchases	United States average purchases
	<u>Pounds</u>	<u>Pounds</u>
Urban:		
Under \$3,000	2.9 - 11.8	7.5
\$3,000 to \$5,000	3.0 - 8.6	7.2
Over \$5,000	6.5 - 14.4	10.7
Rural:		
Under \$3,000	2.3 - 6.3	4.7
\$3,000 to \$5,000	4.2 - 11.2	6.6
Over \$5,000	4.8 - 9.1	6.9

Regional Differences

The wide regional variations in average purchases per buying family in each income level would indicate the possibility of further expansion of the intensive market for frozen fruits and vegetables--particularly in regions with low purchase rates. If national average purchase rates for urban and rural families were to attain the levels reported in the Northeast, for example, the resultant rise in average purchases would be equivalent to about 3.6 pounds per urban family and 4 pounds for each rural family. If such an increase in family purchase rates alone were to occur, demand for frozen green peas through the retail outlet would be expected to rise more than one-third. This increase in quantities purchased would take place among families who are buying this product currently.

If the region with highest average purchases per family were chosen for each product as a guide, large increases in percentage would be noted for each frozen product. However, the use of the highest average purchase rates even as a crude guide to potential expansion of this market would appear unrealistic. Regional product preferences, differences in availability of and prices for the same or competing foods in other forms (primarily fresh), variations in levels of family income, sampling bias, and other factors are involved in these regional average purchase rates. These considerations may tend to distort any estimates based upon the region with the highest purchase rates.

Use of the second highest regional purchase rates may provide a more reasonable measure of possible expansion of the market among current buyers. Such a measure would be expected to avoid some of the sample and reporting bias often found with maximum or minimum observations. Furthermore, to the extent that the purchase rates in the leading region exceed those of the second, there is a built-in hedge against failure of regions with the lowest purchase rates to achieve potential gains. The relative importance of the leading region as a market will also affect the size of this hedge. This involves both percentage of families purchasing and population in the region.

Changes in national average purchases of frozen fruits and vegetables by urban and rural families which would result from a shift to levels currently attained by the second highest regions are shown in table 12. Moderate increases in purchasing rates would result for most products.

Distribution of Family Purchase Rates

No data were obtained from the MRCA National Consumer Panel as to the distribution of families relative to quantities of individual frozen products purchased during the year. Such data, however, would provide a valuable indicator as to potential levels of purchases by buying families. Would such distributions take the form of normal curves? If not, where would the skewness occur?

Table 12.--Urban and rural families buying 10 frozen fruits and vegetables:
Changes in average purchase rates if second highest regional rates were
attained, United States, 1955

Frozen product	Average purchasing rates			
	United States	Second highest region	Differences from United States average	
	<u>Pounds</u>	<u>Pounds</u>	<u>Pounds</u>	<u>Percent</u>
Urban families:				
Vegetables:				
Green peas	8.7	9.5	+0.8	+9
Lima beans	6.0	6.1	+0.1	+2
Spinach	7.4	8.0	+0.6	+8
Snap beans	6.7	6.5	-0.2	<u>1</u> / <u>-3</u>
Broccoli	5.1	5.5	+0.4	+8
Asparagus	2.5	2.4	-0.1	<u>1</u> / <u>-4</u>
Fruits and berries:				
Strawberries	6.4	6.4	0	0
Other berries	2.6	3.5	+0.9	+35
Peaches	2.9	3.2	+0.3	+10
Rural families:				
Vegetables:				
Green peas	6.1	7.1	+1.0	+16
Lima beans	5.3	5.5	+0.2	+4
Spinach	5.1	4.9	-0.2	<u>1</u> / <u>-4</u>
Snap beans	4.4	6.8	+2.4	+55
Broccoli	4.3	4.8	+0.5	+12
Cut corn	4.2	4.4	+0.2	+4
Asparagus	2.4	2.6	+0.2	+8
Fruits and berries:				
Strawberries	5.0	4.9	-0.1	<u>1</u> / <u>-2</u>
Other berries	2.2	2.6	+0.4	+18
Peaches	4.1	7.4	+3.3	+80

1/ Indicative of higher average purchase rates in populous Northeast region than in other regions.

The configurations of such distribution curves would be of importance in developing marketing and promotional strategy, and pricing, as well as evaluating potential developments in the overall market. For example, if it were found that the bulk of the buyers were purchasing large quantities of a product, it might be assumed that under current conditions the market is approaching saturation. In contrast, if there were less of a concentration of buyers, or if this concentration were at a lower level and considerable purchasing involved larger quantities, the possibility of further expansion would be greater.

One related question merits attention. Is there a typical chronological pattern of purchasing? Do new buyers tend to follow a customary pattern in their purchases of frozen fruits and vegetables over time? If so, how does this compare with the purchasing by long-time buyers?

Without information as to the distribution of purchases, the meaning of the average purchase rates cannot assume full significance. However, these rates are important as first approximations and serve as useful indicators.

Comparison of Family Purchase Rates in 1952 and 1955

What changes, if any, have occurred in family purchases of frozen fruits and vegetables during recent years? An indication of the type and extent of changes in family purchasing was obtained through comparison of urban family purchase rates during 1952 and 1955 for 7 frozen products--green peas, lima beans, spinach, broccoli, cut corn, and strawberries. 18/

Urban Purchase Rates, 1952 and 1955

During 1955, urban families purchased more of each of these products than in 1952. However, the greatest relative increases were noted for frozen strawberries, broccoli, snap beans, and cut corn.

Changes in overall purchasing rates are illustrated by a comparison of average purchases per family member during 1952 and 1955 (table 13). Since these figures are averages which include buying and nonbuying families, they might be described as approximating retail purchases per person for the urban population.

These increases in overall purchases took place, in most cases, without major concurrent increases in percentage of urban families purchasing, as shown in table 14.

Increases in retail purchases appear to have arisen primarily from heavier purchases by buying families. This is borne out by data on average purchases by members of urban buying families during 1952 and 1955 (table 15).

18/ Based upon data from MRCA's National Consumer Panels for 1952 and 1955. See Bitting (3) for source of 1952 data.

Table 13.--Seven frozen fruits and vegetables: Average purchases per urban family member, United States, 1952 and 1955

Frozen product	1952	1955
	<u>Pounds</u>	<u>Pounds</u>
Green peas	1.39	1.41
Lima beans .....	.73	.79
Snap beans .....	.54	.69
Spinach .....	.72	.74
Broccoli .....	.43	.64
Cut corn .....	.27	.37
Strawberries .....	.77	.93

Table 14.--Seven frozen fruits and vegetables: Percentage of urban families buying, United States, 1952 and 1955

Frozen product	1952	1955
	<u>Percent</u>	<u>Percent</u>
Green peas	52	51
Lima beans	45	42
Snap beans	34	33
Spinach	35	32
Broccoli	35	40
Cut corn	25	26
Strawberries	50	51

Table 15.--Seven frozen fruits and vegetables: Average purchases per member of buying families, United States, 1952 and 1955

Frozen product	1952	1955
	<u>Pounds</u>	<u>Pounds</u>
Green peas	2.66	2.81
Lima beans	2.64	1.95
Snap beans	1.59	2.13
Spinach	2.07	2.38
Broccoli	1.23	1.66
Cut corn	1.06	1.38
Strawberries	1.54	1.81

Substantial increases in average purchases per member of urban buying families were observed for each of these products. The minimum rise listed was around 0.15 pound, or about 6 percent, for frozen green peas. Other increases noted were as much as 0.5 pound per family member.

National relationships appear to have been duplicated in regional purchase patterns (tables 16 and 17). There appeared to have been little change in the percentage of urban families purchasing these frozen products in any of the 4 regions included. ^{19/} However, quantities purchased per member of buying families during 1955 were considerably greater in 3 regions. Only in the West was there a lesser and mixed response. As expected, the extent of regional changes varies among commodities. However, these variations did not detract materially from the strength indicated for these general tendencies.

SOME FACTORS AFFECTING FAMILY PURCHASES

Family Income and Purchases of Frozen Fruits and Vegetables

It is obvious that family income is a factor in the purchasing of frozen fruits and vegetables. However, the effect of income is masked by wide regional variations in purchase rates--both in percentage of families purchasing and in average quantities purchased. Conceding basic differences in regional demand patterns, can the effect of income be isolated for analysis? Furthermore, may significant patterns be determined from only broad categories of family income--lower (under \$3,000), middle (\$3,000 to \$5,000), and higher (over \$5,000)? ^{20/}

When purchasing patterns of higher, middle, and lower income urban and rural families are compared on a regional basis, some striking relationships are indicated. These include:

1. A wide divergence in effects of income upon purchases by urban and rural families.
2. Particularly among urban families, the existence of a tendency toward a national income effect--transcending regional boundaries.
3. A strong indication that the income effect is related primarily to the entire line of products under study rather than to individual frozen fruits or vegetables.
4. A difference between the effect of income upon the extensive phase of the market (number of buyers) and that upon the intensive phase (size of purchases).

Local or regional factors such as availability of fresh produce, extent of home food processing, comparative prices of food in competing forms, and food preference patterns appear to be dominant in determining general purchasing levels for individual frozen products. The effect of family income tends to be superimposed upon such regional levels of demand.

^{19/} Data for 1955 were conformed to regional breakdown used in 1952 study.
^{20/} Net family income before taxes and other deductions, 1954.

Table 16.--Selected frozen fruits and vegetables: Percent of urban families purchasing, by region, 1952 and 1955

Frozen product	Northeast ^{1/}		North Central ^{2/}		South ^{3/}		West ^{4/}	
	1952	1955	1952	1955	1952	1955	1952	1955
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Green peas	54	54	50	49	43	42	60	57
Lima beans	45	43	37	34	58	56	46	41
Snap beans	41	41	29	27	25	26	37	35
Spinach	45	41	29	24	32	29	30	32
Broccoli	41	41	30	37	36	43	32	39
Cut corn	24	24	23	26	21	22	33	30
Strawberries	55	53	49	58	52	52	43	41

^{1/} New England and Middle Atlantic regions plus Maryland, Delaware, and District of Columbia.

^{2/} East North Central and West North Central regions.

^{3/} South Atlantic region (except Maryland, Delaware, and District of Columbia) and East South Central region plus Arkansas and Louisiana.

^{4/} Pacific, Mountain, and West South Central regions excluding Arkansas and Louisiana.

Table 17.--Selected frozen fruits and vegetables: Purchases per family member of urban buying families, by regions, 1952 and 1955

Frozen product	Northeast		North Central		South		West	
	1952	1955	1952	1955	1952	1955	1952	1955
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Green peas	3.12	3.55	1.79	2.15	1.52	2.32	3.56	2.84
Lima beans	1.87	2.00	1.19	1.58	1.88	2.69	1.59	1.52
Snap beans	1.80	2.56	1.23	1.92	1.26	1.79	1.77	1.87
Spinach	2.42	2.68	1.55	2.21	1.98	2.68	1.93	1.92
Broccoli	1.24	2.06	1.07	1.30	1.47	1.72	1.27	1.47
Cut corn	1.26	1.33	.80	1.37	.96	1.12	1.15	1.60
Strawberries	1.44	1.99	1.69	1.93	1.61	1.72	1.44	1.34

It would appear that we must look beyond income to determine the cause of major regional differences in purchase rates for these frozen foods. However, once these have been determined, the influence of family income level appears to assume a more or less definitive pattern. This implied characteristic of income, if borne out in further studies, may provide a useful tool in evaluating future demand for frozen fruits and vegetables.

Analytical Procedure

Analysis is broken into 3 parts--relationships of family income level to (1) percentage of families purchasing, (2) average quantities purchased per buying family, and (3) average quantities bought by all families (buyers and nonbuyers). Information was developed for urban and rural families in 6 regions.

Findings relative to percentage of families purchasing would be expected to have greatest validity since this is a measure of all families in the sample. Average quantities purchased per buying family would tend to be weaker since this measure is based upon responses of buying families only--for some products only a small portion of total families in the sample. Both considerations are reflected in average quantities bought by all families.

Regional data for urban families would be expected to possess greater uniformity than that for rural families. Rural nonfarm and farm families were not segregated. The relative importance of each of these rural groups varies among regions. Furthermore, observations of quantities purchased by rural families generally are subject to a greater degree of sampling error since a smaller percentage of rural families than of urban families were buyers.

Study of regional income--purchasing relationships for individual frozen fruits and vegetables--was hampered by the limited number of income classifications obtained. Interregional comparisons were complicated by external influences. However, when income-purchasing relationships for each individual product within a region were compared, definite patterns emerged.

Families of different incomes tended to purchase each frozen fruit or vegetable in a manner which was related to their purchases of other frozen products in this group. Purchasing patterns for the group of products tended to vary among regions. The relative position (based upon relative magnitude of purchases by families of varying income) of each individual product varied among regions. However, in each case, the income-purchasing relationship for the product tended to conform to the general income-purchasing pattern for all frozen fruits and vegetables in the region. These regional relationships for the product group form the base for this analysis of family income and purchases.

Data are presented graphically through comparisons of purchases by lower- and by middle-income families to those of families with incomes over \$5,000. 21/ The purchasing responses observed are for individual frozen fruits and vegetables. The result is a measure of correlation between purchasing responses (for example, percentage of families purchasing) of families in 2 income levels for the 10 frozen products under study.

21/ Higher income families used as base since they are the largest single segment of the population and are the heaviest purchasers of most items.

If responses were identical, observations for each commodity in each region would fall in a diagonal line. If more of the high-income families purchase, observations will be to the right of this diagonal. The extent to which high-income families purchase more will be indicated by the distance from the diagonal.

Income and Percentage of Families Purchasing

What effect does family income have upon determining whether or not families will purchase frozen fruits and vegetables? Since information as to purchases was available by three income categories only, the key questions were phrased as follows: (1) In a single region, how do purchases by families with lower incomes compare with those of families having higher incomes? (2) Are relationships found in a single region comparable to those of other regions?

Urban families.--Among urban families receiving more than \$3,000, higher income appears to have little effect upon bringing more buyers into the market. The percentage of families in the middle income category (\$3,000 to \$5,000) which purchased frozen fruits and vegetables tended to approximate or exceed the portion of higher-income families making such purchases. However, a single purchase qualified a family as a buyer 22/ and this relationship bears no implication as to frequency or quantity purchased.

This relationship between middle- and higher-income families tended to be nationwide and to apply generally to each of the frozen products under study. This is illustrated in figure 1, which shows comparisons of percentages of middle- and higher-income families purchasing each of the 10 frozen products in the 6 regions. 23/

When these observations were segregated on a regional basis, even closer relationships between middle- and higher-income families were noted (fig. 2). 24/

22/ Of each individual frozen fruit or vegetable.

23/ Data for figure 1 shown in table 42. Relationships as to percentages of families purchasing, by varying incomes, are indicated by (1) slope of regression line and (2) scatter of observations. If no differences in purchasing patterns and no sampling or reporting error existed, observations would have assumed a 45-degree linear relationship. In relation to higher-income families, a slightly larger percentage of middle-income families and a lesser percentage of lower-income families purchased frozen fruits and vegetables. The limited scatter indicates that basic purchasing relationships were national in scope and involved frozen fruits and vegetables as a group.

24/ Slopes of linear relationships show general similarity of regional purchasing patterns by urban families of 3 income groups, in percentage of families purchasing frozen fruits and vegetables. High coefficients of correlation indicate that observations for individual products did not vary widely from the general relationships for the 10 products. Scatter of observations from central tendencies in figure 2 may be attributable primarily to variations in regional purchasing patterns rather than individual product relationships.

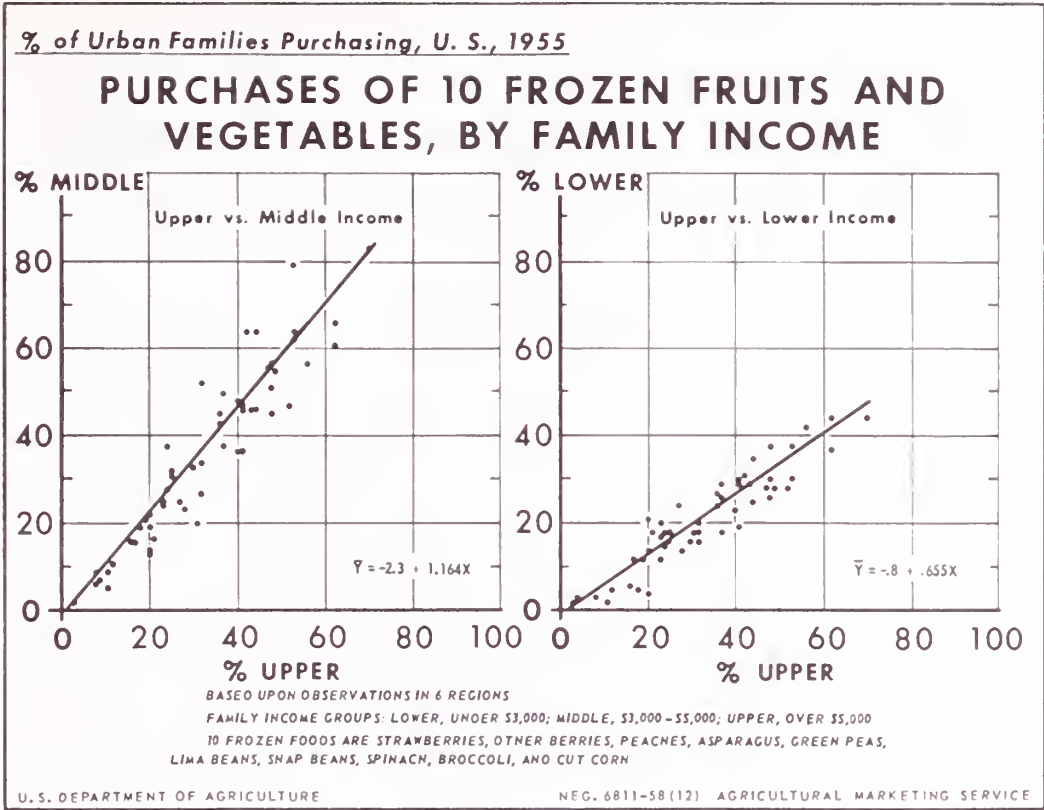


Figure 1

Furthermore, regional observations tended to form linear patterns. These patterns would indicate the possibility that income, at least at these levels, tended to affect purchases of these 10 frozen fruits and vegetables in a similar manner. This raised the question whether middle- and higher-income families are part of the same universe with respect to product desires that are strong enough to bring them into the market.

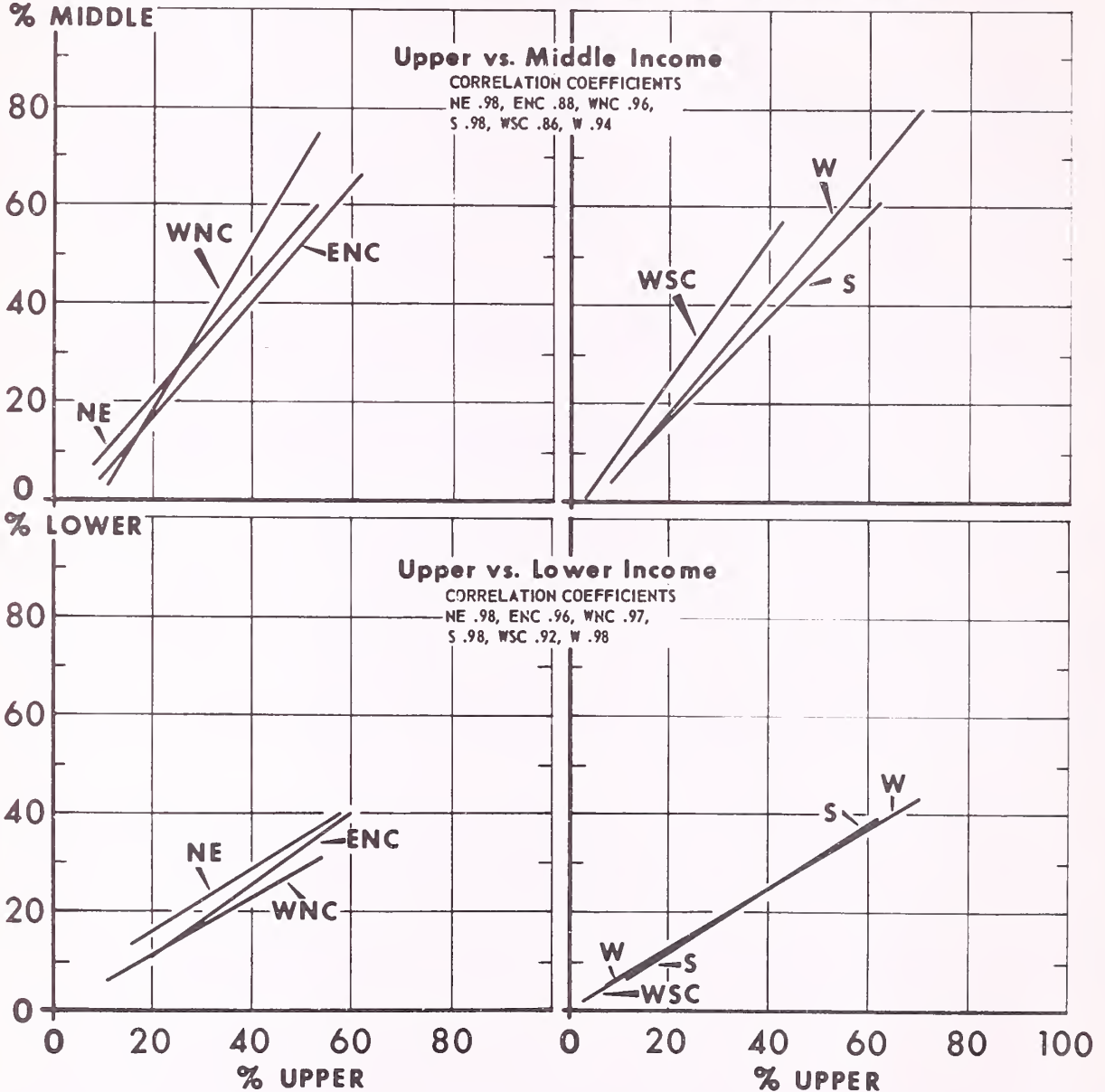
Such universality, at least in threshold interest on the part of middle- and higher-income urban families, may be nationwide. Although the linear interproduct relationships varied moderately among regions, these deviations--using the Northeast region as a base--do not appear to be significant statistically. ^{25/} Thus, when dealing with forces which bring middle- and higher-income urban families into the market, it appears that we may look primarily at the urban market as an entity.

A comparison of the percentage of lower-income families (under \$3,000) purchasing with that of the higher-income group indicates further close relationships. The percentage of lower-income families purchasing, however, tended to be about six-tenths to two-thirds as great as that found for higher-income families.

^{25/} At the 5 percent level.

% of Urban Families Purchasing, by Regions, 1955

PURCHASES OF 10 FROZEN FRUITS AND VEGETABLES, BY FAMILY INCOME



FAMILY INCOME GROUPS: LOWER, UNDER \$3,000; MIDDLE, \$3,000-\$5,000; UPPER, OVER \$5,000
10 FROZEN FOODS ARE STRAWBERRIES, OTHER BERRIES, PEACHES, ASPARAGUS, GREEN PEAS,
LIMA BEANS, SNAP BEANS, SPINACH, BROCCOLI, AND CUT CORN

Figure 2

Variations in regional relationships were noted (fig. 2). However, as in the case of such relationships for middle- and higher-income families, these regional differences may be of limited statistical significance. This provides further evidence to support the proposition that urban families of the several income levels tend to act in a related manner, irrespective of region or residence, in determining whether or not they will enter the market for frozen fruits and vegetables.

Rural families.--The role played by cash income in percentage of rural families purchasing frozen fruits and vegetables differs significantly from that found for urban dwellers. ^{26/} Income level appears to assume greater importance. The percentage of rural families purchasing tends to increase more rapidly as income rises. This is in contrast to the urban pattern where the percentages of middle- and higher-income families purchasing were about the same.

Income relationships appear to be strongest when they involve comparisons among rural income groups. Only in the high rural income category is there a reasonable similarity to urban patterns in percentage of families purchasing.

The rural purchasing patterns, relative to income, were not as well defined as those found among the urban population.

Figure 3 indicates relationships between percentages of rural families in each income level purchasing frozen fruits and vegetables. ^{27/} General relationships are evident; however, individual observations vary widely from central tendencies. The percentage of middle-income rural families purchasing these products tends to be about six-tenths as great as the portion of higher-income families buying; among lower-income rural families, the percentage tends to be around four-tenths as great.

Urban-rural comparisons.--How do rural families compare with urban ones as to percentage purchasing frozen fruits and vegetables? Only in the higher-income category did the portion of rural buyers approach the percentage of urban buying families in the same net family income levels. On the average, the percent of higher-income rural families purchasing these products was around nine-tenths as great as that for their urban counterparts.

^{26/} Net cash income measures for urban and rural families may lack strict comparability because of variations in extent of home food production or other sources of noncash income.

^{27/} Data for figure 3 shown in tables 42 and 43. Slope of regression lines indicates extent to which percentage of upper-income rural families buying frozen fruits and vegetables tends to exceed that of middle- and lower-income rural families. Comparison with figure 2 shows variation between purchasing relationships among urban and rural families of 3 income levels. Wide scatter of observations from linear average relationship provides a measure of the increased importance of regional and individual product factors in rural purchasing patterns.

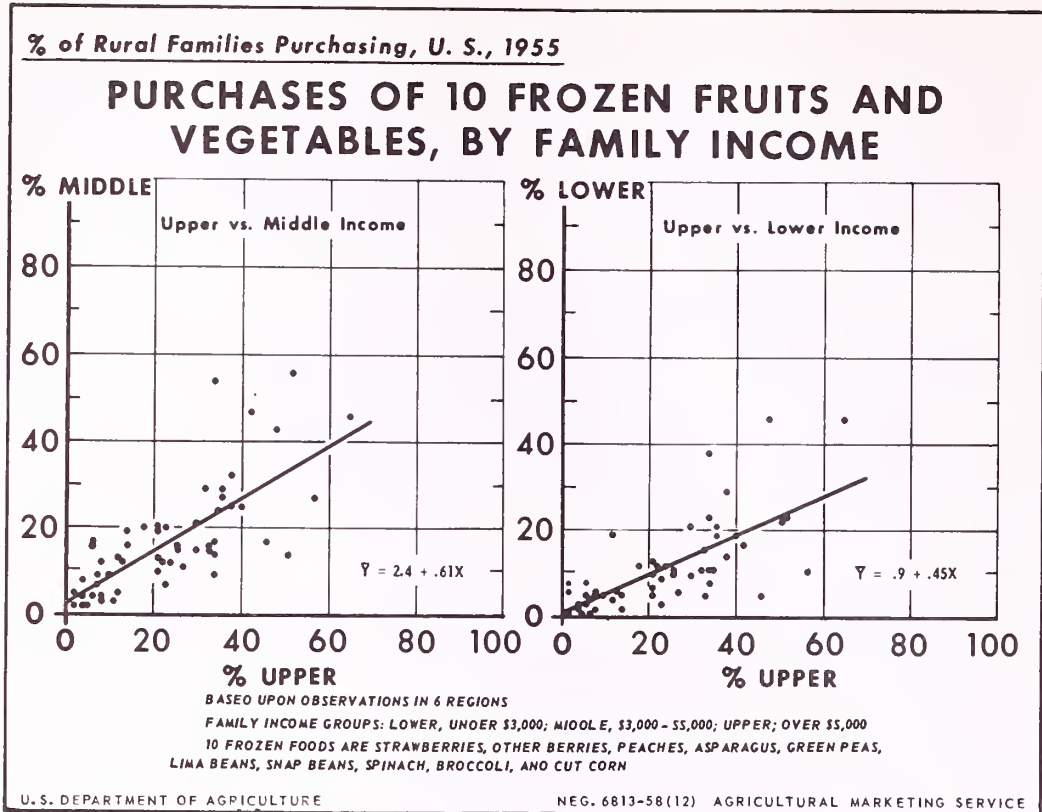


Figure 3

The percentage of middle-income rural families purchasing appeared to approximate generally the rate found for lower-income urban families (under \$3,000). Among lower-income rural families, the percentage purchasing was around six-tenths of the average level found for urban families with incomes under \$3,000. Individual observations, however, tended to deviate widely from these generalizations, particularly among the middle- and lower-income groups.

Regional comparisons.--Significant variations were found in relationships between family income and percentage of rural families purchasing these frozen fruits and vegetables. Whereas upper-, middle-, and lower-income urban families tended to enter the market in a related manner throughout the Nation, rural families of varying incomes appeared to buy differently in different regions. These variations in income-purchasing patterns accounted for a considerable portion of the wide scatter of observations in figure 3.

The extent of differences in regional purchasing patterns is shown by the location of average linear relationships in figure 4. ^{28/} In comparing these

^{28/} Correlation coefficients of figure 4 indicate comparative strength of regional relationships between rural family income levels and percent of families purchasing. Among rural families, variations ascribed to individual products and other factors tend to be greater than those observed for urban families (see figure 3). Widest deviations from central tendency were noted in the Northeast. Slopes of average relationships show extent of differences in regional purchasing patterns. Regional variations from relationships in Northeastern region assume statistical significance at the 5-percent level.

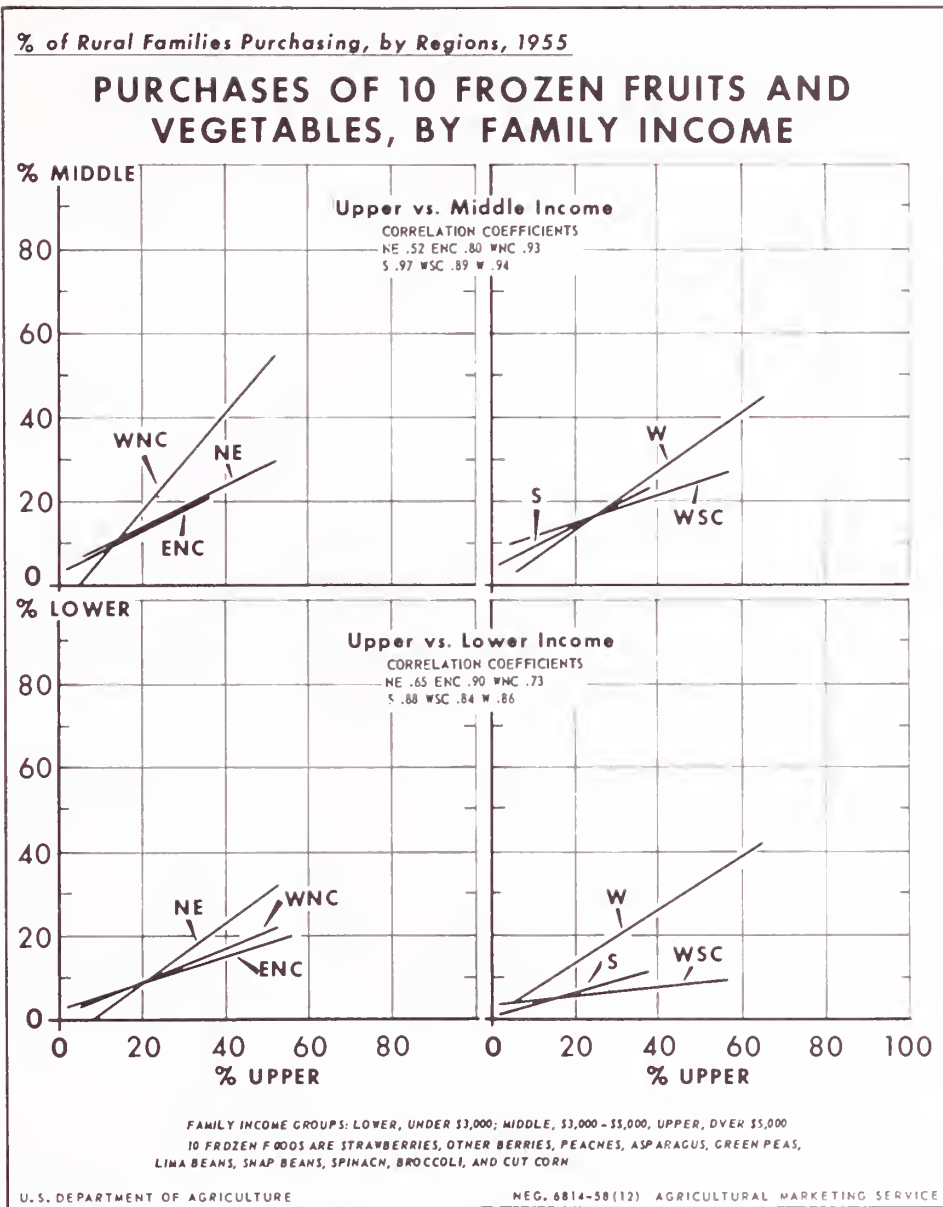


Figure 4

regional relationships, however, allowance must be made for regions with lesser coefficients of correlation. In the Northeast and West South Central regions, the range of individual observations was wider than the general patterns indicated.

Average purchasing relationships between middle- and higher-income rural families tended to show an element of uniformity among regions. In 4 of 6 regions, the percentage of middle-income families buying was less than six-tenths of the rate found for the higher-income group. In only one region, the West North Central, did the percentage of middle-income families buying approximate the proportion of buyers among the higher-income group.

In all regions, the percentage of lower-income families purchasing fell below that of families with more than \$5,000 income. In 3 regions--Northeast, East North Central, and West (heavy users of frozen fruits and vegetables)--the general purchasing relationships of middle- and low-income families appeared to show little variation. In the West North Central, South, and West South Central regions, in contrast, the percentages of lower-income families buying were below those of the middle-income groups.

These purchasing patterns point up the possibility of a basic divergence in rural family purchases by region. The variation may be attributable, at least in part, to such factors as relative sizes of farm and nonfarm segments of the rural population and types of farming operations dominant within each region.

Quantities Purchased per Buying Family

What, if any, relationships exist between family income levels and the quantities of frozen fruits and vegetables purchased by buying families? It has been shown that family income may be related strongly to the percentages of urban and rural families buying in most regions. Income, therefore, is a factor in bringing buyers into the market. What effect does it have upon the quantities they purchase?

Urban families.--Urban buying families with incomes over \$5,000 generally purchased more of these frozen fruits and vegetables than families with less income. However, buying families in the lower- and middle-income groups tended to purchase about the same quantities. On the average, these middle- and lower-income families bought about six-tenths as much of each of these frozen foods as the higher-income families. Although there was considerable scatter in the observations, about 75 percent of these were found within a range from one-half to two-thirds of the purchase levels attained by higher-income families (fig. 5). ^{29/}

A considerable portion of the scatter in figure 6 appears to be related to regional differences in purchasing patterns. ^{30/} When average quantities purchased by middle- and higher-income urban families are compared by region (fig. 6), firm intraregional relationships are indicated for 5 of the 6 regions. The West North Central region was the exception.

^{29/} Data for figure 5 shown in tables 45 and 46. Slopes of regression lines indicate that middle- and lower-income urban buying families purchase similar quantities of frozen fruits and vegetables in the aggregate--around 60 percent of the volumes purchased by urban families with incomes over \$5,000. Individual observations vary widely from central tendency. Part of this variance may be attributed to individual product relationships, regional considerations, and small size of sample.

^{30/} As shown in figure 6, average size of annual purchases of frozen fruits and vegetables by urban buying families of varying income levels tended to follow linear patterns during 1955. These relationships varied significantly, at the 5-percent level, among regions (using the Northeast as a base). Although some deviations may be attributed to individual product differences, the basic relationship between income and quantities purchased appears to apply primarily to the overall frozen fruit and vegetable category.

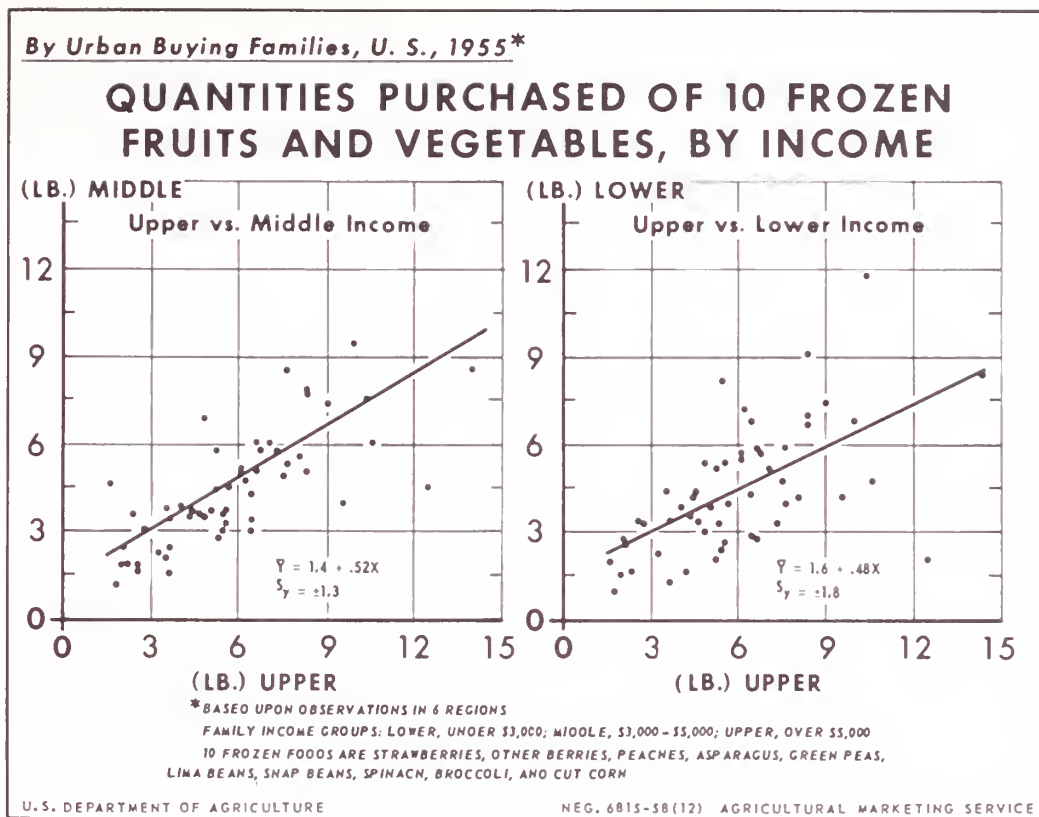


Figure 5

These regional relationships, however, varied widely. Using the North-eastern area as a base, significant differences (at the 5 percent level) were found between each of these regional relationships as to quantities purchased by middle- and upper-income urban buyers. This is in contrast to the finding that no significant differences existed in regional patterns of percentages of urban families purchasing. The influence of income upon bringing families into the market appears to be nationwide, whereas the influence of this factor upon quantities purchased tends to be primarily regional in scope.

Similar relationships were found generally for average purchases by lower-income urban families (figs. 5 and 6). Therefore, it would appear that below the \$5,000 level, income may have little effect upon how much of these frozen fruits and vegetables are purchased. In two heavy purchasing regions, North-east and West, average purchases by lower-income families slightly but consistently exceeded those of middle-income families.

The indicated relationship between lower- and upper-income buyers in the West South Central region almost duplicated that found for middle- and upper-income buyers in the same region. This similarity is of interest because of the wide variation of these from other regional patterns.

These linear regional relationships between average quantities of frozen food purchased by upper-, middle-, and lower-income urban families indicate that here, as in percentages of families purchasing, the influence of income

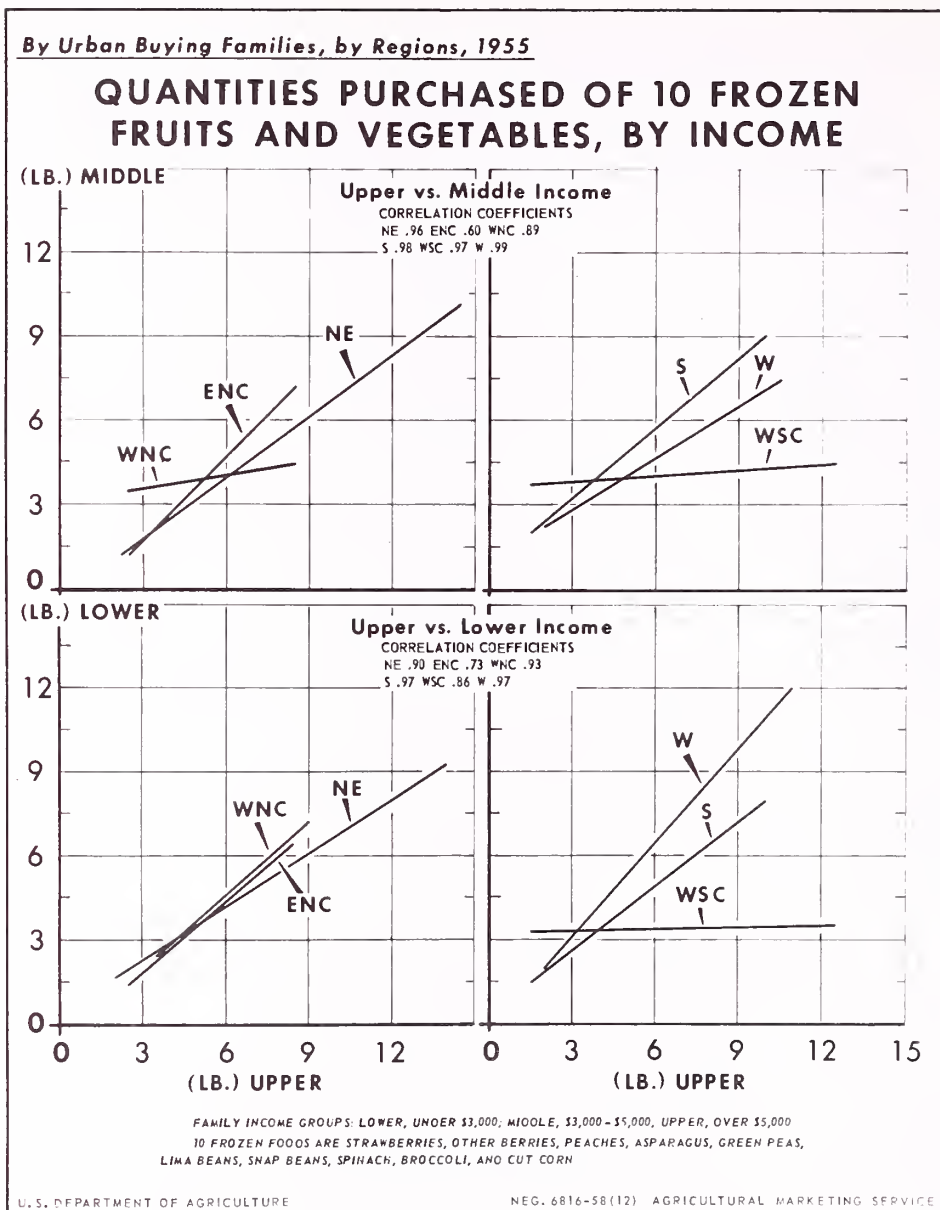


Figure 6

tends to cross product lines. Some variations which may be attributable to individual products were noted, however. Urban families with less than \$5,000 income in each region tended to buy less frozen snap beans, cut corn, and peas than might have been anticipated from the average relationship found for the 10 frozen fruits and vegetables. In contrast, they tended to buy more frozen strawberries and broccoli.

Rural families.--Because of the small percentages of rural families reporting purchases of frozen fruits and vegetables, many of the data on average purchases per buying family are based upon relatively few observations. This limitation generally precluded analysis of the type and detail which was applied to average purchases of urban buyers.

As anticipated, there were few clear-cut income-purchasing relationships. Higher-income rural buying families tended to purchase more frozen fruits and vegetables than middle- and lower-income families. Also, income level appears to be related to purchases of these frozen products as a group to a lesser degree than was noted among urban families.

Average Purchases per Family

To analyze potential effect of income, it would appear preferable to use the relations of income to percentage of families purchasing and to average quantities purchased by buyers. Income appears to exert force upon the intensive and extensive phases of demand in differing degree. Therefore, the projected effect of a given shift in family income structure may diverge from that which would be expected from analysis of average purchase rates only. However, such average purchase rates (including buyers and nonbuyers) will indicate the overall effect of income upon family purchases during a single time span.

Regional average purchase rates.--An indication of the overall effect of income upon purchasing of frozen fruits and vegetables during 1955--and differences in effects of income by region and urbanization--is shown in table 18. Urban families, even those in the low-income segment, tend to have higher average purchase rates than rural families in any income group. Among urban and rural families, average purchases appear to have a direct relationship with income level.

Table 18.--Frozen fruits and vegetables: Percent of urban and rural families purchasing, by region and income, 1955 1/ 2/

(Average purchases by urban families, over \$5,000 income = 100)

Region	Urban			Rural		
	Over	:\$3,000 to:	Under	Over	:\$3,000 to:	Under
	:\$5,000	:\$5,000	:\$3,000	:\$5,000	:\$5,000	:\$3,000
	Percent	Percent	Percent	Percent	Percent	Percent
Northeast	100	80	60	50	55	40
East North Central	100	95	75	50	25	10
West North Central	100	100	90	60	60	35
South	100	90	55	30	25	15
West South Central	100	70	30	55	25	10
West	100	95	115	70	35	45

1/ Based upon average linear relationships for 10 leading products. Shown to nearest 5 percent level.

2/ Net family income before income taxes and other deductions, 1954.

In 4 of 6 regions, middle-income urban families tended to purchase within 10 percent as much of these frozen fruits and vegetables as urban families with incomes over \$5,000. In contrast, lower-income urban families had an average purchase rate around 40 percent less. Successively greater divergences were found for average purchases by higher-, middle-, and lower-income rural families.

The data indicate wide variations between family income groups within a single region as to the overall effect of income on purchases during 1955. Among urban buyers, for example, income appears to have played a minor role in average quantities purchased by families in the Western and West North Central areas. In contrast, wider variations in purchase rates were noted in other regions--particularly in the West South Central States.

Among rural families, middle- and higher-income families in the Northeast, West North Central, and Southern regions tended to purchase similar average quantities of each of these foods. In the other regions middle-income rural families purchased at about one-half the rate noted for the group with over \$5,000 incomes. However, in each region, except the West, purchases by rural low-income families were markedly below the rates observed for the middle-income group.

These are intraregional comparisons. Regional purchasing levels, of themselves, vary widely. The extent of such variations is concealed by the uniform base used in table 12. However, these data illustrate how the effect of income on demand for frozen fruits and vegetables varies among regions. For example, based on 1955 relationships as reported, an upward shift in family incomes might have little effect in increasing demand in the West North Central region. In contrast, a similar shift in the West South Central area might be accompanied by greater increase in usage.

Variations in pattern ascribed to individual products.--The relationships of income to average purchases listed above have been based upon purchasing patterns for the group of frozen fruit and vegetable products. Many observations varied, sometimes widely, from these average relationships. Some of this variation may be attributable to demand characteristics for individual products. By plotting deviations from the lines of average relationship, it was found that purchases of some products were consistently above or below the average income-purchasing relationships on a regional basis.

Frozen strawberries were the one product of which middle- and lower-income urban and rural families purchased more (or higher-income urban families purchased less) than might be expected from the multiproduct average relationships. Although similar findings were made for frozen peas, lima beans, cut corn, other berries, and peaches in individual regions, none of these items showed the uniformity in pattern found for strawberries.

The converse of this situation was found more often. Higher-income urban families bought more frozen snap beans in all regions, and more frozen spinach in 4 of the 6 regions. Higher-income families bought more frozen lima beans, broccoli, cut corn, and asparagus in one or two regions.

From these data it would appear that the family market for frozen strawberries may be affected less than that for other products by differences in income level. In contrast, it would appear that, of these products, frozen snap beans and spinach are most affected by income level.

Family Income and Short-term Usage

The previous analyses were based upon annual purchases of frozen fruits and vegetables. Now let us turn to similar measures based upon purchases during a shorter period--a week in spring 1955. With 9 income breaks available, analysis was made for individual commercially frozen products.

Income and Percentage of Households Using

Observations made during 7-day periods in the spring show that, as income rose, the percentage of households using each of the frozen products 31/ tended to rise more rapidly. In contrast, annual data indicated that the percentage of urban families with \$3,000-\$5,000 incomes purchasing during the year was approximately the same as that for urban families with greater incomes. 32/ These findings are not contradictory. They may be attributed largely to differences in time involved. Monthly, quarterly, and semiannual data, likewise, would show differences of this type.

It has been shown that higher-income families buy more of these products during the year. Since average purchases per transaction are small, it may be inferred that these families buy and use them more often. Thus, usage during a week, by families of varying incomes, would be expected to reflect differences as to frequency of use as well as percentage of households using.

Relationships of income to percentages of households using in a week in the spring tended to approximate those based upon average quantities used by all households during the same period. This similarity results, in part, from the fact that these data (percentage of families using) carry a built-in measure (frequency of use) of quantities used by using households as well as of percentage of households using.

31/ Frozen lima beans, snap and wax beans, broccoli, green and other peas, spinach, (all) corn, and fruits (mostly strawberries).

32/ Differences in income computations tend to accentuate comparison (MRCS--net family income before taxes and other deductions; HFCS--income after income taxes). Data also point out problems involved in use of long- and short-time bases. Use of intermediate time periods would have several advantages over an annual base, since the single-time buyers and other occasional users would tend to be screened out. Quantities used by this category probably represent only a small portion of total marketing.

Average Usage per Buying Family 33/

For households reporting usage of a frozen fruit or vegetable in a week in the spring, what was the average usage rate (average usage per using family)? For each frozen fruit and vegetable included, the consumption per household using showed limited variation by income.

This pattern would be expected. With a varied menu, and for items not regularly used, there is a limitation to the number of times per week that any single frozen product would be served. This limitation would apply to households regardless of income. Furthermore, the quantity served per meal and per serving probably would be influenced by the size of the frozen food package.

Average usage of all frozen vegetables combined, however, shows a definite relationship to family income level. Although using households with higher income may not use more of a single frozen product during a week, they evidently use a greater variety. Using households with incomes over \$10,000 had a usage rate for all frozen vegetables, other than potatoes, which was almost double that observed among groups with less than \$3,000 incomes (fig. 7). 34/

Average usage by users during 1 week also provides a different type of measure than annual usage (purchase) data provide. Annual data show concurrent rises in average usage and family income, whereas, during 1 week, little of this increase in usage with higher income is reflected.

Average Usage by All Households

An indication of the possible extent to which quantities of frozen fruits and vegetables used by urban households increase with higher family income levels is shown in figure 8. This is based upon quantities used per urban household in a week in the spring of 1955. These data indicate that usage of all frozen vegetables (other than potatoes) tended to increase with income at roughly a proportionate rate. (Families with 10 percent higher incomes tended to use around 10 percent more of these frozen products.) Similar usage patterns are observed for frozen broccoli, peas, spinach, snap beans, and all fruits (mostly strawberries). Usage of frozen lima beans and corn also rose with income, but at a less rapid rate. 35/

How do these relationships compare with income-usage patterns developed from annual purchase data? Comparisons for 6 frozen vegetables (table 13 and

33/ Average size of using families, by income, was not tabulated. To the extent that larger families have more earners and higher incomes, differences in average family size are linked to the income factor.

34/ Figure 7 is based upon data from 1955 Household Food Consumption Survey (12, table 16, p. 134).

35/ Data for figure 8 is from 1955 Household Food Consumption Survey (12, table 16, p. 134).

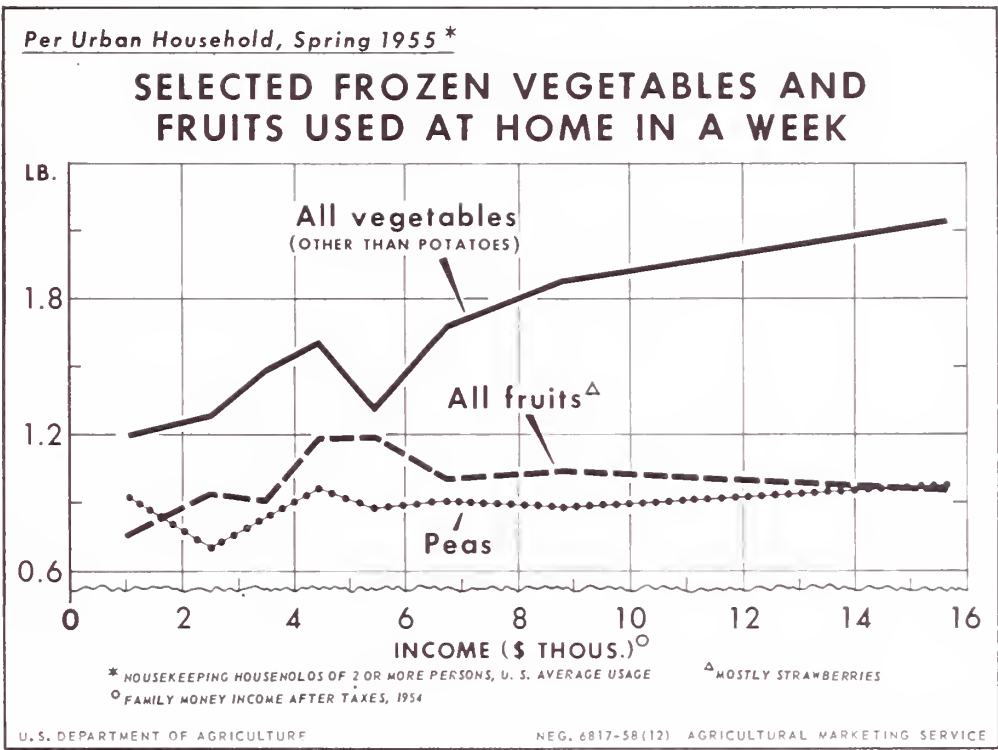


Figure 7

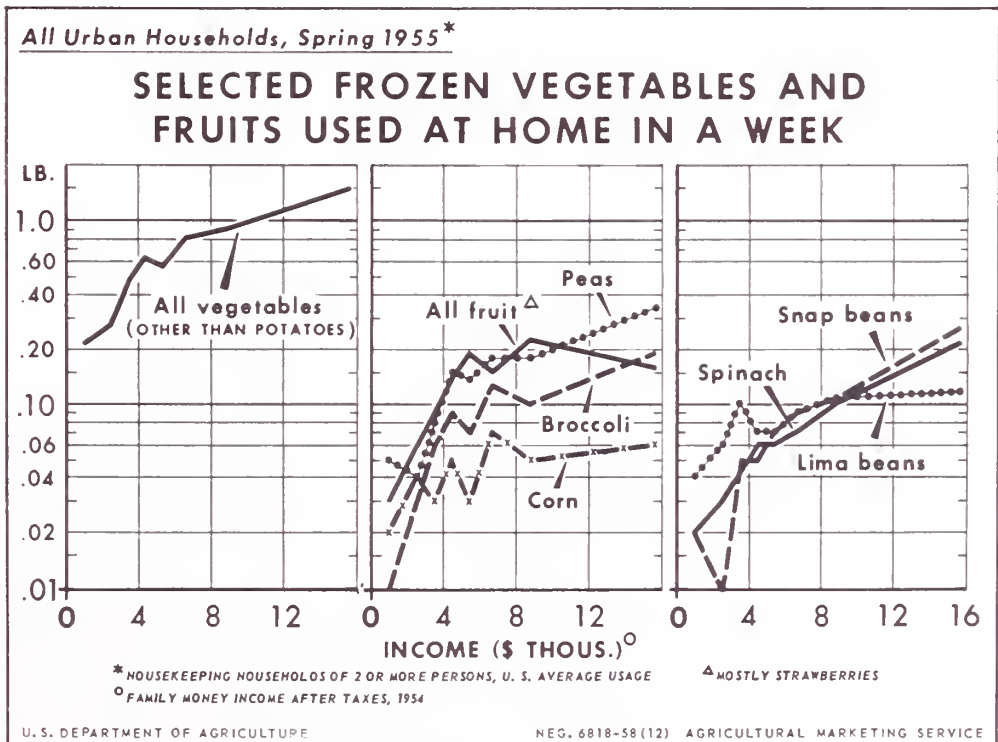


Figure 8

fig. 9) provide useful first approximations although they are subject to variations in family income computations. 36/

Income-usage relationships for individual frozen vegetables showed considerable uniformity within each set of data. Likewise, the same exceptions were noted in both groups--frozen snap beans showed higher usage with rising income, and frozen lima beans a lesser increase in usage. Observations from these two samples of urban housekeeping households provide strong evidence of a firm income-usage pattern for most frozen fruits and vegetables. Differences in these observations raise a question only as to the actual configuration of this pattern.

Data based upon a week in spring indicate that average usage by urban housekeeping households tends to rise in proportion to increases in family income level. Annual purchase data show usage increasing with income at a slightly slower pace.

Major differences appear to revolve around average usage by lower- and middle-income families. For each of the 6 products, greater proportionate increases in usage were noted in data based upon household consumption during a week in spring than in average annual data (table 19). Likewise, lesser, but important, variations in percentage changes in usage between middle- and higher-income households were observed in the two sets of data. Such variations, however, lacked the consistency or degree found at the lower income levels.

Availability of Frozen Products in Retail Food Stores

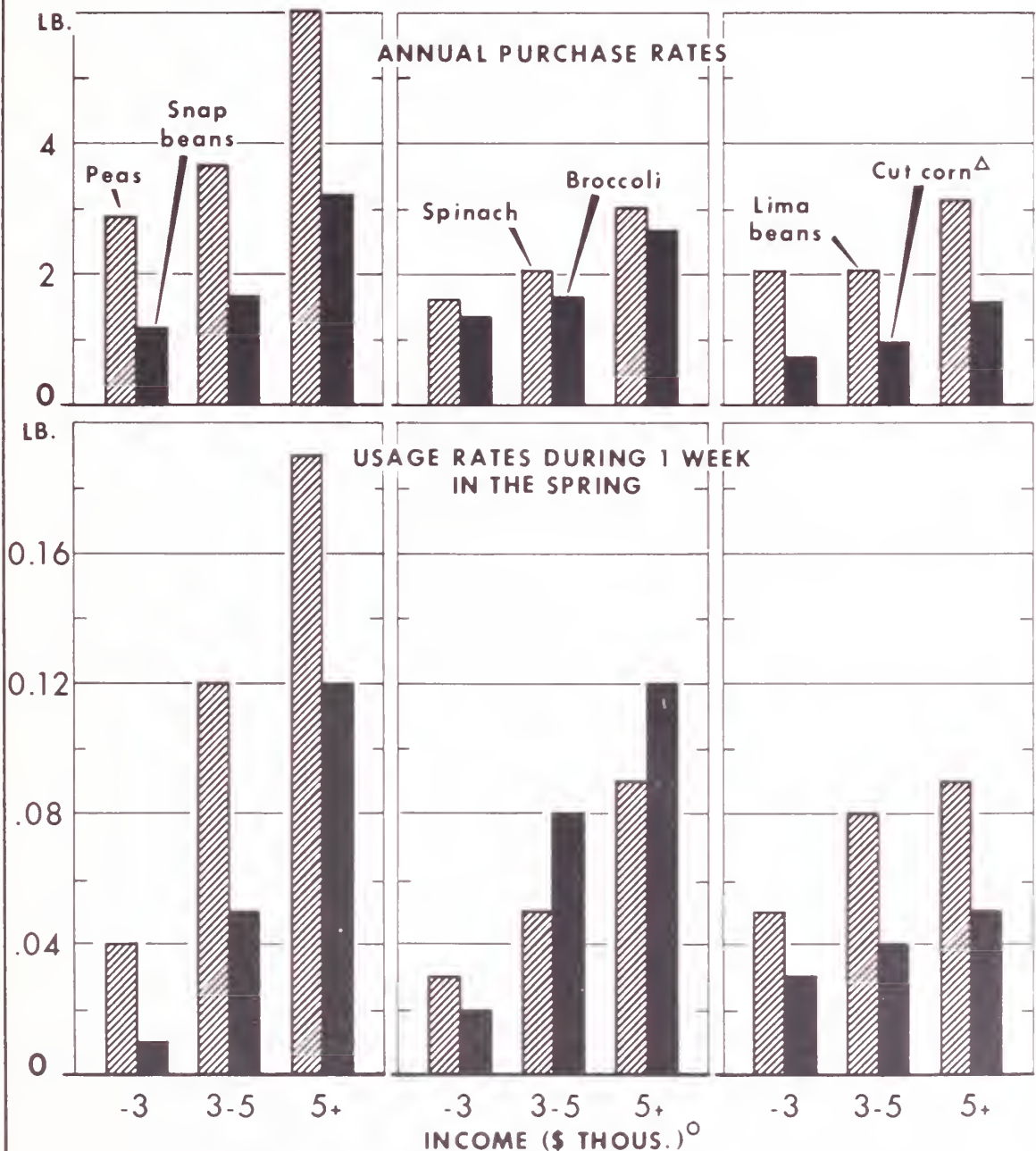
Availability in retail food stores has been an important consideration in development of the market for frozen fruits and vegetables. However, this factor may be expected to be of lesser importance in future market expansion. Only in rural areas and small towns--particularly in the South--were there many retail food stores that did not have facilities for handling frozen products during 1955.

36/ The degree of variation between net cash income computed before and after income taxes will increase with income level. However, importance of differences attributable to variations in income computation methods was not ascertained. Figure 9 is based on 1-week data for urban housekeeping households of 2 or more persons, and annual data for all households in MRCA National Consumer Panel. For family income, Household Food Consumption Survey data is based upon family income (after income taxes) for 1954; MRCA data is based upon family income before taxes, 1954. Average incomes within each income group were computed from Household Food Consumption Survey data. Similar averages were not obtained for MRCA panel members.

Annual Compared with 1 Week in Spring, 1955

FROZEN VEGETABLE USAGE

In All Urban Households* in Three Income Levels



* HOUSEKEEPING HOUSEHOLDS OF 2 OR MORE PERSONS, U. S. AVERAGE USAGE

^Δ FROZEN CUT CORN ONLY

[○] FAMILY MONEY INCOME, 1954 (BEFORE TAXES FOR ANNUAL PURCHASES, AFTER TAXES FOR 1-WEEK USAGE)

Figure 9

Table 19.--Selected frozen vegetables: Average quantities used in all urban households, by income, during 1 week in spring and during entire year, United States, 1955

Frozen vegetables	Average quantities used per household, by income ^{1/}					
	Under \$3,000		\$3,000-\$5,000		Over \$5,000	
	1 week	Year ^{3/}	1 week	Year ^{3/}	1 week	Year ^{3/}
	in spring ^{2/}	in Year ^{3/}	in spring ^{4/}	in Year ^{3/}	in spring ^{5/}	in Year ^{3/}
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Green peas ..	0.04	2.88	0.12	3.67	0.19	6.04
Lima beans ..	.05	2.06	.08	2.07	.09	3.14
Snap beans ..	.01	1.19	.05	1.66	.12	3.23
Broccoli .....	.02	1.37	.08	1.68	.12	2.68
Spinach .....	.03	1.63	.05	2.05	.09	3.01
Corn ^{6/} .....	.03	.72	.04	.95	.05	1.60

^{1/} Data for 1-week usage are based upon family money income after taxes in 1954; annual data are based upon family income before taxes in 1954.

^{2/} Average income, \$1,936.

^{3/} Average incomes were not computed for annual data.

^{4/} Average income, \$4,043.

^{5/} Average income, \$8,067.

^{6/} Annual averages are for frozen cut corn only.

Data for 1 week from Household Food Consumption Survey, 1955 (¹², tables 1 and 16), for urban housekeeping households of 2 or more persons; annual data from MRCA.

Table 20 shows estimated percentages of all retail food stores having freezer cabinets and of stores selling frozen orange juice concentrates during August 1955. Although all freezer cabinets may not be available to frozen fruits and vegetables, these figures provide a reasonable guide to their availability in retail food stores. In August 1955, 7 out of 10 retail food stores had freezer cabinets. Almost 6 out of 10 had frozen orange juice concentrates available. ^{37/}

Even these figures will tend to understate the relative availability of freezer storage facilities and frozen food products. Let us assume that food stores having freezers and handling frozen orange juice concentrates in each sales volume category (table 20) were representative of all food stores in these size groups as reported in Census statistics for retail trade in 1955. If so, food stores having freezers handled over 90 percent of dollar sales for foods sold through these outlets. Also, stores having frozen orange juice concentrates accounted for almost 87 percent of such food sales.

^{37/} By August 1957, this total had risen to 72 percent.

Table 20.--All retail food stores: Estimated percentages with freezer cabinets and with frozen concentrated orange juice available by store classification and location, August 1955

Store classification and location	Retail stores with--	
	Freezer cabinets <u>1/</u>	Frozen orange juice concentrates available
	Percent	Percent
U. S. total	70	59
Volume of store business annually:		
Under \$50,000	56	44
\$50,000 - \$99,999	88	81
\$100,000 - \$299,999	94	88
\$300,000 and over	99	99
Store location by city size, population:		
Under 10,000 <u>2/</u>	59	48
10,000 - 99,999	80	69
100,000 - 499,999	80	69
500,000 and over	77	70
Store location by region or city: <u>3/</u>		
Northeast <u>4/</u>	75	68
North Central <u>5/</u>	87	77
South <u>6/</u>	46	33
Mountain-Southwest <u>7/</u>	66	57
Pacific	78	69
New York City	68	64
Chicago	87	72
Los Angeles	94	84

1/ Computed from data contained in table 5, page 12 of source.

2/ Includes rural route stores outside corporate city limits.

3/ Data for New York City, Chicago, and Los Angeles not included in regional totals.

4/ New England and Middle Atlantic regions, plus Maryland and Delaware.

5/ East North Central and West North Central regions.

6/ South Atlantic region, except Maryland and Delaware; East South Central region, plus Louisiana and Arkansas.

7/ Mountain region, plus Texas and Oklahoma.

It is probable that a sizable portion of families trading with food stores without freezers also has access to other retail food stores having such facilities. Thus, a portion of the sales volume of retail food stores without freezers would have come from purchasers with access to other food sales outlets.

Availability of Refrigeration Facilities to the Household

The extent to which availability of home refrigerated storage facilities affects family purchases of frozen fruits and vegetables is indicated in table 21. These data from an earlier study (3) show the wide differences in frozen food purchase rates between urban families with and without home refrigeration--both in percentage of families purchasing and in average quantities purchased per member of buying families.

Table 21.--Urban family purchases of 3 frozen foods by type of food storage facility: Percent of families buying and average purchases per member of buying families, United States, 1952

Frozen product and purchase unit <u>1/</u>	Food storage facility			No freezer or refrigerator
	Freezer <u>2/</u>	Refrigerator With freezer	Refrigerator Without freezer	
Peas:				
Percent	56	57	52	26
Quantity (oz.) ...	49.6	46.4	39.5	14.2
Cut corn:				
Percent	26	30	23	3
Quantity (oz.) ...	14.2	19.1	16.1	5.2
Orange juice:				
Percent	74	70	68	39
Quantity (oz.) ...	70.9	80.9	77.4	10.1

1/ Percent of families purchasing and average quantities purchased per member of buying families (ounces = frozen weight).

2/ Owned throughout calendar year.

It is obvious that the major variation in purchase patterns for these 3 frozen items was between families with and without home refrigeration. When home refrigeration was available, the type of refrigeration was reported to have lesser effect upon frozen food purchases. However, this survey compared only 3 specific frozen items. These findings do not imply similar overall usage of frozen foods including products frozen in the home.

During 1954, almost 93 percent of all housekeeping households had mechanical refrigerators. Similar ratios were found among urban, rural nonfarm, and farm households (table 22). Information was not obtained as to whether mechanical refrigerators possessed freezer space.

Table 22.--Percentage of households having mechanical refrigerators, by urbanization and income, United States, 1954 1/

Size of household and money income after income taxes :	Urban :	Rural nonfarm :	Rural farm :	All households
:	Percent	Percent	Percent	Percent
All households	93.7	90.3	92.5	92.7
1-person households	88.4	77.1	75.4	85.0
Households of 2 or more persons <u>2/</u>	94.3	91.4	93.0	93.4
Under \$2,000	83.0	77.1	88.0	82.4
\$2,000 - \$2,999	92.1	94.8	95.6	93.5
\$3,000 - \$3,999	96.9	95.8	93.9	96.3
\$4,000 - \$4,999	98.4	98.9	99.5	98.6
\$5,000 - \$5,999	99.0	100.0	99.0	99.3
\$6,000 - \$7,999	99.1	100.0	100.0	99.3
\$8,000 - \$9,999	98.3	100.0	97.4	98.5
\$10,000 and over	100.0	95.7	100.0	99.4

1/ Housekeeping households of 1 or more persons.

2/ Includes households not classified by income.

Household Food Consumption Survey, 1955 (22, table 3).

Around 13 percent of all housekeeping households had freezers in 1954. Around 8 percent of urban housekeeping households, 15 percent of rural nonfarm, and nearly 40 percent of rural farm households possessed such equipment. The percentage of families with freezers rose steadily with family income levels (table 23).

An even larger portion of families had regular access to freezing facilities--including their own, someone else's, or rented freezer storage lockers (table 24). Around 12 percent of all urban, 26 percent of rural nonfarm, and over 63 percent of rural housekeeping households had such facilities available regularly. 38/

Although home refrigeration facilities have been an important factor in family purchases of frozen fruits and vegetables, their current widespread

38/ Similar data by region for mechanical refrigeration, freezers, and regular access to the several types of freezing facilities are shown in tables 50 to 52.

Table 23.--Percentage of households having freezers, by urbanization and income, United States, 1954 1/

Size of household and money : income after income taxes :	Urban :	Rural : nonfarm :	Rural : farm :	All : households
	Percent	Percent	Percent	Percent
All households	8.1	15.0	39.9	13.4
1-person households	3.1	3.1	15.8	3.6
Households of 2 or more persons <u>2/</u>	8.6	16.0	40.6	14.3
Under \$2,000	4.5	7.6	26.4	12.0
\$2,000 - \$2,999	1.9	9.7	40.7	9.7
\$3,000 - \$3,999	4.3	17.6	45.6	11.8
\$4,000 - \$4,999	5.5	19.6	50.0	12.1
\$5,000 - \$5,999	9.3	16.1	53.5	13.6
\$6,000 - \$7,999	14.2	24.4	60.2	18.8
\$8,000 - \$9,999	13.7	28.0	74.4	19.9
\$10,000 and over	30.3	34.8	69.6	32.2

1/ Housekeeping households of 1 or more persons. Excludes households having regular access to someone else's freezer.

2/ Includes households not classified by income.

Household Food Consumption Survey, 1955 (22, table 3).

usage indicates that they may be of limited importance in further expansion of this market. Again, we are dealing with specific, more-or-less staple frozen items which are generally purchased in small quantities. Overall expansion of the frozen food market, including a wider variety of frozen prepared foods, for example, may be affected more strongly by the size of freezer capacity in the home.

Seasonal Purchasing Patterns

The extent to which family purchases vary throughout the year is an important factor in evaluating present annual average purchase rates and potential expansion of the retail market for frozen fruits and vegetables. These products are available throughout the year. If wide seasonal variations were found, the total market for these products might be expanded through promotion during the periods of lower sales.

Data on quarterly purchases of frozen fruits and vegetables, obtained from the MRCA National Consumer Panel, showed seasonal patterns for purchasing of frozen vegetables during 1955. One seasonal purchasing pattern was found for frozen peas, lima beans, snap beans, and cut corn, and a slightly different one

Table 24.--Percentage of households having regular access to freezing facilities, by urbanization and income, United States, 1954 ^{1/}

Size of household and money income after income taxes :	Urban :	Rural nonfarm :	Rural farm :	All households
:	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
All households	12.2	26.5	63.4	21.6
1-person households	3.9	7.2	31.3	5.9
Households of 2 or more persons ^{2/}	13.1	28.2	64.4	23.1
Under \$2,000	6.7	18.8	48.1	23.1
\$2,000 - \$2,999	4.9	26.5	67.0	20.2
\$3,000 - \$3,999	8.8	32.0	72.8	21.3
\$4,000 - \$4,999	12.3	29.7	83.0	21.4
\$5,000 - \$5,999	15.3	31.2	78.3	23.1
\$6,000 - \$7,999	20.2	32.9	82.6	26.1
\$8,000 - \$9,999	16.3	36.0	97.5	24.7
\$10,000 and over	34.5	56.5	95.7	39.6

^{1/} Households owning freezer or locker or having regular access to someone else's freezer.

^{2/} Includes households not classified by income.

Household Food Consumption Survey, 1955 (22, table 3).

was found for frozen spinach and broccoli. Frozen asparagus was the only vegetable for which seasonal purchases differed markedly from the others (fig. 10).

Purchases for the first, second, and fourth quarters appeared to be consistent. Third-quarter purchases were around 15 to 30 percent below the levels found for the balance of the year. The low points of family purchases corresponded with periods when fresh produce was readily available.

A different family purchasing relationship was indicated for frozen fruits and berries (fig. 10). The two major items, frozen strawberries and peaches, had similar patterns. Purchasing of these products was highest during the second quarter (April-June) and lowest from October to December. A divergent trend was indicated for frozen berries other than strawberries. Seasonal variations in purchase rates for each of these items were greater than those found among frozen vegetables. Likewise, the low purchasing levels did not occur at the times when fresh fruits and berries were most readily available.

As these observations are quarterly averages, the length of time involved may conceal greater short-term variations. Also, they are national averages.

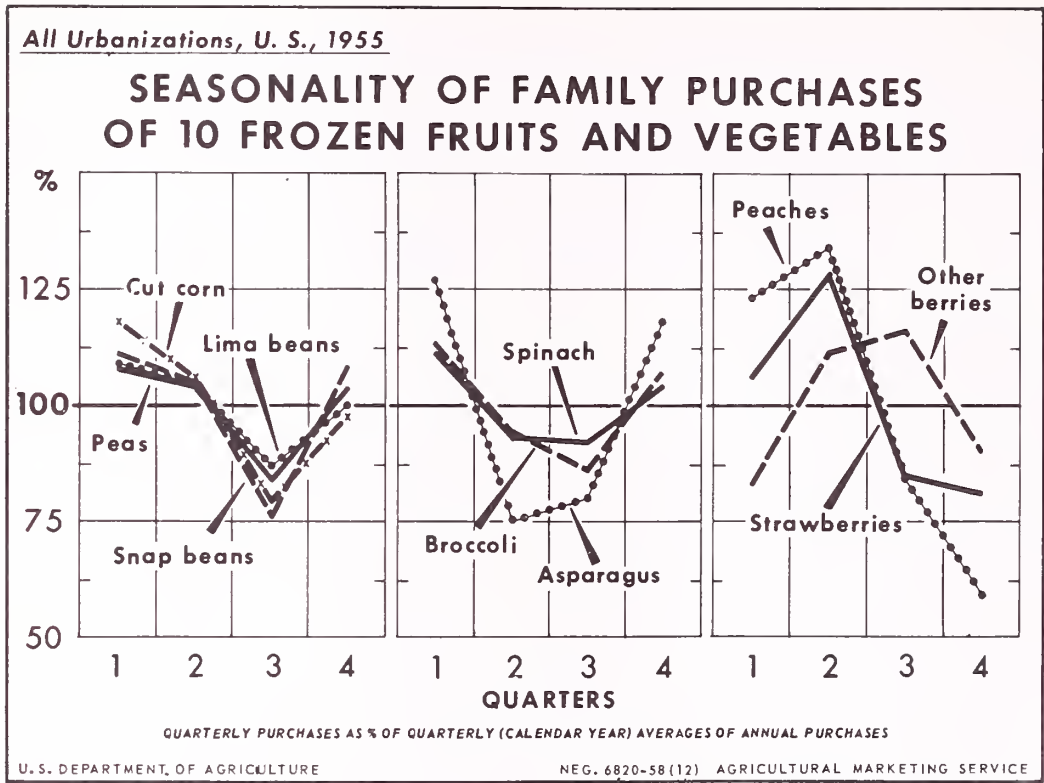


Figure 10

Regional relationships are shown in an index of average quarterly family purchase rates for frozen fruits and vegetables (table 47). Regional patterns are similar for most of the listed frozen products. For example, quarterly average combined purchases of the 7 frozen vegetables included in this study closely followed the same pattern in the Northeastern, Southern, and Western regions (see fig. 11). Because families in the Northeast and West purchase more frozen vegetables than families in the South, it is significant that the timing of their purchases was almost identical.

Although seasonal purchase patterns appear to be well established, short-term changes in purchasing levels may occur through lowered prices or special merchandising efforts aimed toward selling more of an individual frozen product. The tendency for combined frozen vegetable purchases to follow a stable seasonal pattern, however, suggests that special sales efforts for an individual item might reduce the purchasing of other frozen products.

Prices of Frozen Fruits and Vegetables

Information was obtained as to average prices paid by families purchasing frozen fruits and vegetables during 1955. These were actual retail prices paid per ounce, for products of different grade and size and for varying numbers of units per transaction. Since these were average prices for all

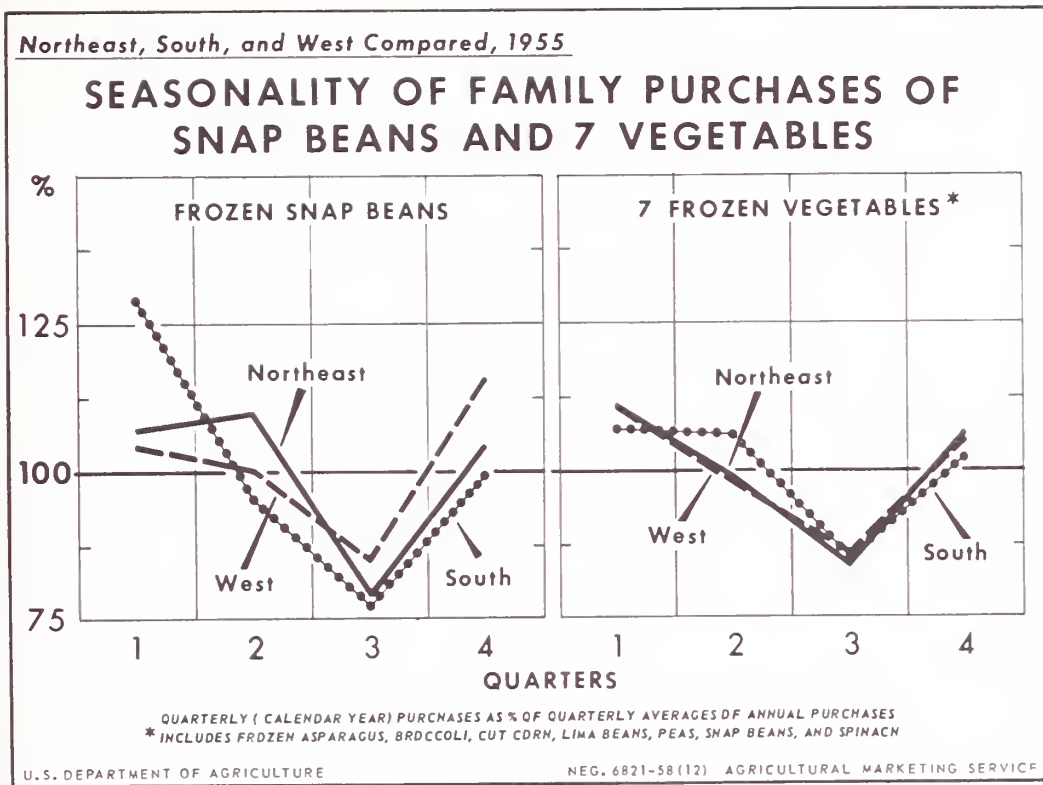


Figure 11

purchases, within the general product category, they may be expected to vary in level from other price series based upon specific graded products, for example.

These data indicate the pattern of 1955 retail prices. They provide implications as to how retail pricing will affect purchase levels. However, one year's observations will not answer fully the basic question--How does price affect family purchases of these products? The answer would involve determination, over a longer period, of supply, demand, and price interrelationships between these frozen products, the same foods in nonfrozen form, and other competing food items. These requirements exceed the scope of data available for the present study.

Regional Prices

Table 25 shows regional average prices paid by families for 10 ounces of selected frozen fruits and vegetables during 1955. ^{39/} These data indicate (1) a narrow range of average prices, (2) a loose correlation between transportation costs and regional price differentials, and (3) lower prices in urban than in rural areas.

^{39/} Based upon average prices per ounce, regardless of container size or grade purchased.

Table 25.--Average annual prices per 10 ounces for selected frozen vegetables and fruits by urban and rural families, 6 regions, 1955

Region	Average price per 10 ounces ^{1/}					
	Urban	Rural	Urban	Rural	Urban	Rural
	Cents	Cents	Cents	Cents	Cents	Cents
	<u>Green peas</u>		<u>Lima beans ^{2/}</u>		<u>Spinach</u>	
Northeast	18.2	18.3	24.9	24.9	15.3	15.1
East North Central	18.2	19.0	25.7	26.6	15.1	14.9
West North Central	18.5	18.4	23.9	26.5	15.4	16.4
South	18.3	19.8	22.9	28.4	15.4	15.8
West South Central	19.0	20.0	22.6	24.8	15.8	16.6
West	17.8	19.4	22.5	25.0	15.5	16.7
	<u>Snap beans</u>		<u>Broccoli</u>		<u>Cut corn</u>	
Northeast	21.6	21.0	23.5	22.9	18.1	18.9
East North Central	22.1	23.4	23.5	25.7	17.1	18.5
West North Central	21.6	23.3	23.2	23.7	16.8	15.1
South	20.9	21.9	23.1	24.5	17.2	17.6
West South Central	21.2	21.6	22.3	22.6	16.3	17.6
West	20.5	22.3	20.9	24.6	16.7	17.0
	<u>Asparagus</u>					
Northeast	39.5	41.1				
East North Central	36.7	40.0				
West North Central	40.0	38.9				
South	38.3	40.9				
West South Central	39.8	36.9				
West	38.9	39.6				
	<u>Strawberries</u>		<u>Other berries ^{3/}</u>		<u>Peaches</u>	
Northeast	26.4	25.7	28.8	27.6	17.6	15.8
East North Central	26.4	26.9	24.3	26.3	19.9	22.4
West North Central	25.0	24.3	24.4	23.8	19.2	21.3
South	25.2	28.0	28.4	30.3	18.0	21.2
West South Central	25.9	26.4	27.5	32.3	20.3	21.2
West	24.8	27.1	25.9	29.5	19.0	19.8

^{1/} Average price paid for all purchases during 1955--includes various container sizes and product grades.

^{2/} Includes fordhooks.

^{3/} Composite price for all frozen berries other than strawberries. Prices are subject to annual and seasonal price variations resulting in changes in proportion of individual berries in the total.

Urban-Rural Prices

A comparison of average prices paid by urban and rural families shows that, in 47 out of 60 observations (10 commodities x 6 regions), urban families paid less for frozen fruits and vegetables. Only in the Northeast did rural families appear to purchase most of these products at the same or lower prices.

The median price differential paid by rural families was about 1 cent per 10-ounce unit. In over one-third of the observations rural purchasers were paying between 1 and 3 cents more. Higher rural prices result in part from the additional handling and services required in rural areas. An area with scattered and often small retail outlets may not lend itself to the efficiencies in frozen food distribution which may be attained through urban-type mass merchandising.

Data are not available to examine the extent, if any, to which higher rural retail prices might limit the development of the rural market.

The tendency toward urban-rural retail price differentials indicates the desirability of using average prices paid by urban families as the basis for regional price comparisons. Urban markets are more homogeneous than rural markets. Factors affecting rural prices--in part peculiar to each region--will distort regional average prices (including urban and rural prices) when they are used for interregional comparisons. A lack of regional price comparability may spring from regional variations in (1) percentages of urban and rural families, (2) population density, (3) distances (measured in mileage and time) from distributing centers, (4) income distribution, and (5) other factors, many of a local nature. These elements would be reflected in regional average marketing-cost differentials. In turn, they would be determinants, at least in part, of differentials in regional average retail prices.

Regional Price Differentials

The narrow range of interregional differences in average prices paid by urban families is indicated by the following:

<u>Frozen product</u>	<u>Maximum interregional price differentials</u> <u>(Cents per 10 ounces)</u>
Green peas	1.2
Lima beans	3.2
Spinach	.7
Snap beans	1.1
Broccoli	2.6
Cut corn	1.8
Asparagus	3.3

- Continued

<u>Frozen product (Cont.)</u>	<u>Maximum interregional price differentials</u>
Strawberries	1.6
Other berries	<u>1/4.5</u>
Peaches	2.7

1/ Probably involve variation in mixture of higher and lower priced berries. Includes raspberries, blackberries, blueberries. Composite price for all berries other than strawberries.

A portion of these regional price differences may be attributable to transportation costs.

Lowest regional average prices were noted, generally, in important production areas. Highest prices were indicated for regions farthest removed from production. Although actual interregional transportation-cost differentials cannot be obtained without detailed information on movements from the various production centers, the influence of these differentials is evident. In several cases, such as green peas and spinach, regional price differentials approached the estimated regional transportation-cost differentials.

Other possible elements in these regional price differentials include variations in the mixture of frozen foods purchased, in merchandising practices, and in services performed. Whether regional variations occur in grades or package sizes purchased is not known. Likewise, regional differences in the use of introductory and other special prices are unknown.

Furthermore, even a national sample of this size--when divided into regional units of urban families purchasing--will include some small statistical cells. In such cases, a single error in recording purchase prices would be reflected in overall regional average prices. Other sampling bias could result from limited deviation of the sample from the universe of frozen food buyers. These considerations alone show that further analysis of this narrow range of average regional prices would be based upon tenuous grounds.

After allowance is made for transportation-cost differentials, the average prices paid by urban buyers in each region tend to be uniform throughout. Although local situations may be concealed within regional averages, this uniformity of prices is to be expected under classic concepts of competition.

Seasonal Price Patterns

Quarterly average prices were obtained for each region (see table 26). As these data include all purchases of both urban and rural buyers, they are not strictly comparable to the annual average prices quoted above.

The extent of quarterly price variation, by regions, is shown in table 27. Moderate shifts in average prices occurred during 1955--when measured as a

Table 26.--Quarterly average prices per unit paid by all families purchasing 7 frozen vegetables in 6 regions, 1955 1/

Frozen product and quarter	Northeast	East North: Central	West North: Central	South	West South: Central	West
	Cents	Cents	Cents	Cents	Cents	Cents
Green peas:						
1	17.3	17.7	18.3	18.2	18.8	17.4
2	17.3	18.1	17.9	18.3	18.4	17.8
3	18.9	19.2	17.8	18.8	19.9	18.2
4	19.4	19.7	19.7	19.6	21.2	18.9
Lima beans: <u>2/</u>						
1	25.1	25.8	24.2	23.0	22.9	22.5
2	24.5	25.8	24.2	23.0	23.0	22.0
3	25.3	26.0	24.5	23.3	24.2	22.9
4	25.2	25.9	24.5	23.8	25.8	22.9
Spinach:						
1	18.0	17.9	17.8	18.5	18.4	18.0
2	17.4	17.7	19.6	17.8	18.2	17.8
3	17.0	18.2	17.5	18.0	18.4	17.5
4	17.0	17.9	18.4	17.5	18.4	17.5
Snap beans:						
1	21.9	23.0	21.5	21.1	21.6	21.0
2	21.5	21.5	20.7	20.7	22.5	20.3
3	21.7	20.9	22.3	21.3	22.3	19.9
4	21.0	22.2	21.8	21.2	22.1	19.3
Broccoli:						
1	23.5	23.0	22.3	23.5	22.3	21.4
2	23.2	24.1	23.4	23.4	21.6	21.8
3	23.2	23.6	23.1	22.9	23.1	20.7
4	23.6	24.1	23.9	23.1	23.6	21.0
Cut corn:						
1	18.2	15.7	15.8	16.4	16.7	16.7
2	17.6	16.7	15.1	17.0	16.7	16.2
3	18.2	19.1	16.7	17.5	17.6	17.4
4	18.5	19.3	17.9	18.6	18.8	17.3
Asparagus:						
1	40.1	36.8	38.3	40.2	28.3	38.6
2	39.4	35.0	39.7	38.9	40.3	37.4
3	39.7	38.9	36.3	39.7	42.1	40.1
4	40.3	35.8	39.9	32.3	56.6	39.6
Strawberries:						
1	33.6	30.6	27.5	28.8	27.6	27.5
2	33.3	30.6	28.6	28.7	27.8	28.1
3	33.8	28.4	28.2	28.9	26.5	26.6
4	34.0	28.9	26.9	28.5	27.7	25.7

See footnotes at end of table.

--Continued

Table 26.--Quarterly average prices per unit paid by all families purchasing 7 frozen vegetables in 6 regions, 1955 1/--continued

Frozen product and quarter	North-east	East North: Central	West North: Central	South	West South: Central	West
	Cents	Cents	Cents	Cents	Cents	Cents
Peaches:						
1	18.4	23.5	19.4	19.9	19.9	18.8
2	19.8	23.1	21.2	18.4	23.1	19.5
3	19.9	21.9	23.4	20.4	21.3	21.1
4	18.1	25.0	22.0	23.7	21.6	22.2

- 1/ Includes all container sizes purchased, mostly 1 pound or less.
- 2/ Includes fordhooks.

percentage of average annual price. However, from the retail purchasers' point of view, such quarterly average price changes are fairly small. In over one-half of the observations (32 out of 59), the average seasonal price variations amounted to less than 2 cents per 10-ounce container. Three-quarters of the observations showed less than a 3-cent maximum variation per package.

When the 3 lowest-volume items--frozen asparagus, berries other than strawberries, and peaches--are eliminated 40/, the range of seasonal price variations is reduced drastically. In only one case did the seasonal price variation found among the 7 leading products exceed 3 cents per 10-ounce package. In one-half of these observed prices, the range was less than 1.5 cents per package. For three-quarters of the observations, the price changes amounted to 2 cents or less.

Table 27 also indicates that the pattern of seasonal price changes varied among regions. If the 3 low-volume items are excluded, the Northeast and Southern areas have the least seasonal price fluctuations--1 cent or less--on the average for 7 products. No region exceeded an average of 1.75 cents, however. For these leading products during 1955, few seasonal variations in average regional prices exceeded 10 percent of the midpoint of the seasonal price range.

Is there a strong interregional seasonal price pattern? Do regional average quarterly prices tend to change in the same direction? Evidence here is inconclusive. This is borne out by a comparison of quarter-to-quarter changes in average prices, by region (table 28). In only 4 observations out of 30 did all regions move simultaneously in the same direction. Four or more regions moved the same direction in only 17 of the 20 observations.

40/ These items would be subject to sampling error because the samples are small.

Table 27.--Ten frozen fruits and vegetables: Maximum quarterly unit price variations and midpoint of unit price range, by region, 1955

Frozen product	Maximum quarterly price variation per unit					
	North-east	East North-Central	West North-Central	South	West South-Central	West
	Cents	Cents	Cents	Cents	Cents	Cents
Green peas	2.1	2.0	1.9	1.4	2.8	1.5
Lima beans .....	.8	.2	.3	.8	2.9	.9
Spinach	1.0	.7	2.1	1.0	.2	.5
Snap beans .....	.9	2.1	1.6	.6	.9	1.7
Broccoli .....	.4	1.1	1.6	.6	2.0	1.1
Cut corn .....	.9	3.6	2.8	2.2	2.1	1.2
Asparagus .....	.9	3.9	3.6	7.9	<u>1/</u>	2.7
Strawberries .....	.7	2.2	1.7	.4	1.3	2.4
Other berries	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Peaches	1.8	3.1	4.0	5.3	3.2	3.4
	Midpoint of price range					
Green peas	18.4	18.7	18.8	18.9	19.8	18.2
Lima beans	24.9	25.9	24.4	23.4	24.4	22.4
Spinach	17.5	18.0	18.6	18.0	18.3	17.8
Snap beans	21.4	22.0	21.5	21.0	22.0	20.2
Broccoli	23.4	23.6	23.1	23.2	22.6	21.2
Cut corn	18.0	17.5	16.5	17.5	17.8	16.8
Asparagus	39.8	37.0	38.1	36.3	<u>1/</u>	38.8
Strawberries	33.6	29.5	27.8	28.7	27.2	26.9
Other berries	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Peaches	19.0	23.4	21.4	21.0	21.6	20.5

1/ Data not available.

2/ Involves a product mixture varying among regions.

This lack of consistency in direction of price changes applied also to the commodities studied. In only one case--frozen peaches--did prices in 4 of the 6 regions move in the same direction in each successive quarter. Even here, the regions which showed opposite price movements tended to vary from quarter to quarter.

The only indication of a possible interregional pattern in seasonal pricing was found in a comparison of second and third quarter average prices. At this time, retail prices of 8 of 10 products moved in the same direction in 4 or more regions. Price changes between the first and second quarters, and the third and fourth quarters, in each case showed no firm tendency in direction of regional price movements for these frozen products.

Table 28.--Ten frozen fruits and vegetables: Direction of regional changes in quarterly average retail prices, 1955 ^{1/}

Frozen product	Regions								
	First to second			Second to third			Third to fourth		
	quarter			quarter			quarter		
	Up	No	Down	Up	No	Down	Up	No	Down
:change:			:change:			:change:			
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Green peas	2	2	2	5	---	1	6	---	---
Lima beans	1	3	2	6	---	---	2	2	2
Spinach	1	---	5	3	---	3	1	3	2
Snap beans	1	---	5	3	---	3	1	---	5
Broccoli	3	---	3	1	1	4	6	---	---
Cut corn	2	1	3	6	---	---	5	---	1
Asparagus	2	---	4	5	---	1	3	---	3
Strawberries ...	3	1	2	2	---	4	3	---	3
Other berries ^{2/}	2	1	3	1	---	5	2	1	3
Peaches	4	---	2	4	---	2	4	---	2

^{1/} Based upon calendar year.

^{2/} A composite of all berries other than strawberries.

It must be pointed out, however, that we are dealing with limited shifts in average prices and the possible influence of sampling error cannot be overlooked. Also, the impact of rural family purchases upon average regional prices cannot be segregated for evaluation. However, this lack of short-term pricing consistency between regions tends to raise questions as to the rapidity and extent to which price changes at the processing level are translated into retail frozen food prices.

Average price changes between the second and third quarters of 1955 may reflect changes in outlook for the new processing year. Changes during the rest of the year appear to have been determined more by local pricing situations, in the short term, than by basic price adjustments emanating from the general supply-demand situation of these products. The similarity of annual average prices among regions, however, indicates that these shorter-term retail price patterns tended toward balancing themselves within the year.

Average Size and Price of Individual Transactions

Most family buyers of individual frozen vegetables purchase only enough for a single meal at a time. Few purchasers buy multiple units in a single transaction (fig. 12).

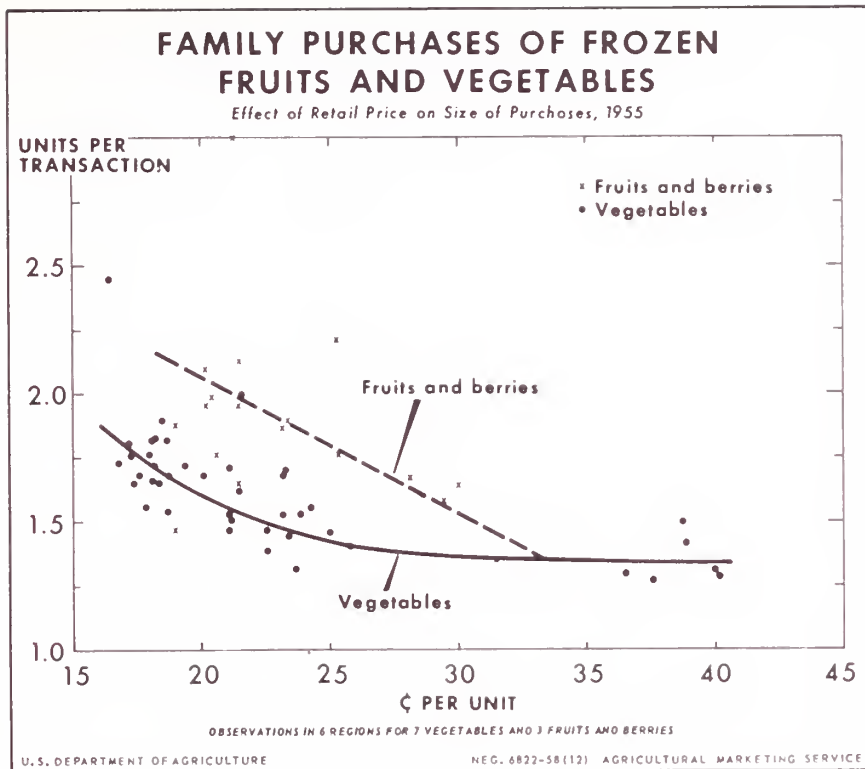


Figure 12

The minimum average purchase of any of the 10 frozen products in the 6 regions was around 1.25 units (as if every fourth buyer had bought 2 packages). The average for all regions was about 1.4 to 1.8 packages. Average purchases of more than 2 units per transaction were found for only one frozen vegetable.

The highest purchase rates per transaction were found for the lowest-priced frozen vegetables. At 17 cents per package, the average purchase was around 1.7 units, whereas at 25 cents the average transaction size dropped to about 1.4 packages. In the few observations where price was above 25 cents the number of units purchased approximated the minimum level--1.25 to 1.5 packages. Thus, it would appear that price affected transaction size only when the price was below 25 cents per package. As unit prices dropped below 25 cents, transaction size generally increased around 3 percent for each penny in price reduction.

Figure 12 provides a partial indicator of consumer responses to varying price levels. However, if the price of a given product rises or falls, the quantity purchased per transaction might not follow the line of average relationship shown in figure 12. Here, each frozen vegetable (or fruit) is represented by 6 regional observations, which tend to form clusters within narrow bands of price and quantity. Therefore, there is little correlation between observations for any single product. The general relationship, therefore, is for a group of frozen vegetables.

This raises the question as to what extent individual product factors are involved as well as price. During 1955 frozen spinach and cut corn were the least expensive items. Did purchasers buy more per transaction of these particular products? Likewise, did these items with lower average prices include more special multiunit pricing in their merchandising? Data were not obtained to answer these questions. Therefore, the influence of retail quantity discounts and of temporary price reductions for single units within this period cannot be evaluated.

The above limitations must be considered in using data from figure 12. However, the relation between price and size of transaction indicated for frozen vegetables shows that price is a factor in multiunit purchasing. The question is, "To what extent?" The key price is not the single package price but the total cost of the transaction. What, if any, is the consumer response pattern to various levels of total price in multiunit transactions?

Frozen fruits and vegetables are purchased infrequently. Total purchases might be increased through efforts to obtain multiunit buying. These are storable products, and ready availability in the home might increase the annual consumption rate. Obviously, if the consumption rate in the home did not rise, any market-expanding benefits from multiunit merchandising would be dissipated.

More multiunit purchases are made of frozen fruits and berries than of frozen vegetables (fig. 12). With fruits and berries, most observations were within a range of 1.5 to 2.25 packages, in spite of higher prices per package for frozen fruits and berries.

Within the price range observed, 20 to 35 cents per unit, there was an inverse relationship between price and average size of transaction. Although the correlation is limited, products selling at 20 cents tended to be sold at an average rate of 2 to 2.25 packages. In contrast, those selling for 30 cents appeared to be purchased at the rate of 1.5 to 1.75 units per transaction.

Although there was wide divergence from this average relationship, it appears to parallel roughly the inverse relation of price to size of transaction observed for frozen vegetables with unit prices under 25 cents. Thus, at any given price, the average quantity of frozen fruits and berries purchased per transaction was around one-half unit higher than that of frozen vegetables.

Why do family buyers tend to purchase more frozen fruits and berries in multiunits? Is it partly because of existing eating habits? Or, does the price structure for frozen fruits and berries provide an incentive for larger purchases?

Product Competition

Purchase rates for commercially frozen fruits and vegetables obviously are affected by the quantities purchased in alternative forms--fresh, canned, or dried. Likewise, they are affected by the extent of home food production.

Any detailed analysis of such product competition would involve complex considerations, including the extent to which substitution may occur between forms of a product, and price interrelationships. Analysis of these factors exceeds the scope of this study. However, limited insight may be gained through a comparison of national and regional usage rates for these fruits and vegetables in their various forms.

Purchase of Fresh and Frozen Fruits and Vegetables from April to June

After months of limited shipments, large quantities of most of the fruits and vegetables under study enter the market from April to June. Widespread availability of these fresh foods would be expected to affect the purchases of the processed items during all or part of this 3-month period.

The relative magnitude of fresh fruit and vegetable shipments during the spring season is indicated in table 29. These figures were based upon total reported unloads of selected fresh fruits and vegetables during 1955 in a composite of 27 major markets scattered throughout the United States.

Unloads during the second quarter (April-June) of fresh green peas, spinach, snap and wax beans, asparagus, and strawberries exceeded those of any other single quarter. Likewise, heavy volumes of fresh lima beans, corn, broccoli, and berries, other than strawberries, were available during the same period.

However, MRCA data on quarterly purchases by families of frozen fruits and vegetables tended to remain high during the second quarter in spite of strong competition from fresh supplies. Quantities of frozen products bought by all families during April-June as percentages of annual quarterly average purchases were as follows:

<u>Frozen product</u>	<u>Second quarter purchase rate (annual quarterly average = 100)</u>
	<u>Percent</u>
Green peas	104
Lima beans	104
Spinach	93
Snap beans	105
Broccoli	94
Cut corn	106
Asparagus	75
Strawberries	128
Other berries	111
Peaches	134

Table 29.--Selected fresh fruits and vegetables: Percentage distribution of annual unloads in 27 cities, by quarters, 1955 1/

Class and commodity	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.
	Percent	Percent	Percent	Percent
Vegetables:				
Green peas	14.4	43.5	30.7	11.4
Lima beans	4.2	21.9	61.9	12.0
Spinach	29.2	32.8	13.6	24.4
Snap beans <u>2/</u>	15.7	30.8	29.5	24.0
Broccoli	27.5	27.5	10.2	34.8
Cut corn	4.8	35.3	51.4	8.5
Asparagus	6.7	91.7	1.2	.4
Fruits:				
Strawberries	13.3	70.8	12.4	3.5
Other berries	0	26.1	72.8	1.1
Peaches .....	.2	3.9	91.3	4.6

1/ Total reported rail and motortruck unloads (preliminary figures). The following cities were included:

- Northeast--Boston, New York City, Philadelphia, Pittsburgh.
- East North Central--Cincinnati, Detroit, Columbus, Ohio, Cleveland, Chicago.
- West North Central--St. Louis, Minneapolis-St. Paul, Kansas City, Mo.
- South--Atlanta, Baltimore, Birmingham, Jackson, Miss., Washington, D. C.
- West South Central--Dallas-Ft. Worth, New Orleans.
- West--Denver, Los Angeles, Oakland, San Francisco, Portland, Oreg., Seattle.

2/ Includes wax beans.

Quantities of most frozen products purchased during the second quarter were slightly less than the volumes bought during the preceding quarter, but combined purchases of fresh and frozen were greater in the second quarter. Generally, it would appear that a sizable portion of the fresh products may be absorbed into a seasonal expansion in demand for fruits and vegetables. Shifts from processed to fresh form might even be a secondary source of demand for listed fresh items.

The impact of fresh supplies upon use of frozen products varies among commodities. Purchases of frozen asparagus sagged heavily during the second quarter. In contrast, usage of strawberries, in both fresh and frozen form, reached a peak during this period.

Usage of Purchased Fresh, Frozen, and Canned Fruits and Vegetables

How does family usage of commercially frozen fruits and vegetables compare with use of the same foods purchased in fresh or canned form? Does usage of these foods in fresh, frozen, and canned form follow any pattern in relation to family income level or type of urbanization?

Table 30 shows the percentages of urban, rural nonfarm, and farm house-keeping households, by income level, that reported using selected commercially frozen fruits and vegetables in a week in spring (April-June) 1955. Similar usage data for most of these products in fresh and canned form appear in tables 31 and 32, respectively. 41/

The products included in tables 30-32 are those which were used in large quantities in fresh, frozen, and canned form during the spring months. Summaries for all vegetables or all fruits were not shown because such totals for canned or fresh include usage of important foods, such as tomatoes, which are not available in frozen form.

When usage is compared for each urbanization group, a general similarity in pattern appears for use of purchased commercially frozen and fresh foods. Greatest usage occurred among urban households, the least among rural farm households. Averages for the rural nonfarm group generally were found between the urban and rural farm usage levels. Usage by urban, rural nonfarm, and farm households varied widely in most cases. In contrast, urbanization appears to be of lesser importance in usage of commercially canned products.

Income-usage patterns for frozen fruits and vegetables have been analyzed in detail. However, these data indicate that income-usage relationships for these products purchased fresh and commercially canned differ markedly from those observed for the frozen. Although patterns vary among individual foods, the direct relationships found between family income and usage of frozen items tend to be lacking among the listed fresh and commercially canned fruits and vegetables. Fresh strawberries are the most notable exception. Usage of fresh strawberries rose rapidly with successively higher income levels.

These data on comparative usage of fresh, frozen, and canned fruits and vegetables serve to focus attention upon some aspects of relationships between products as well as between different forms of the same foods. Information in tables 30-32 reflects the combined influence of many factors other than those directly associated with urbanization and income. These data are presented only as a more detailed view of usage relationships found during spring 1955. They are not intended to show cause and effect or degree of competition between these products in their various forms.

41/ Products obtained through purchase only. Foods produced at home or received as gifts are excluded.

Table 30.--Selected frozen fruits and vegetables: Percent of households using purchased products, by urbanization and income, in a week in spring (April-June), United States, 1955 ^{1/}

Urbanization and income class ^{2/}	Peas	Lima beans	Spinach	Snap and wax beans	Broccoli	Corn	Strawberries
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Urban:							
Under \$2,000	4.9	5.8	2.2	2.7	2.2	1.8	4.0
\$2,000 - \$2,999	5.6	7.1	3.0	1.9	4.1	3.4	4.9
\$3,000 - \$3,999	9.5	9.7	5.2	6.4	7.3	3.8	8.3
\$4,000 - \$4,999	15.6	9.0	6.6	6.8	11.3	5.9	10.2
\$5,000 - \$5,999	16.0	8.3	7.7	8.3	9.3	2.7	13.3
\$6,000 - \$7,999	19.8	10.4	9.2	11.2	17.2	7.1	11.8
\$8,000 - \$9,999	20.5	14.5	11.1	12.8	12.8	6.0	17.9
\$10,000 and over ...	35.2	15.5	23.9	24.6	19.7	6.3	12.7
All households ^{3/} ..	13.6	8.7	6.8	7.6	9.9	4.1	9.3
Rural nonfarm:							
Under \$2,000	1.3	2.7	.4	1.3	.9	.9	1.3
\$2,000 - \$2,999	5.8	6.5	1.9	2.6	2.6	1.9	4.5
\$3,000 - \$3,999	8.3	10.6	2.8	1.9	3.7	2.8	8.3
\$4,000 - \$4,999	10.1	7.4	3.2	4.2	3.7	2.1	9.0
\$5,000 - \$5,999	18.8	11.6	3.6	12.5	7.1	4.5	6.3
\$6,000 - \$7,999	18.1	13.8	4.3	13.8	7.4	7.4	10.6
\$8,000 - \$9,999	24.0	12.0	8.0	16.0	16.0	8.0	8.0
\$10,000 and over ...	0	4.3	4.3	4.3	8.7	4.3	4.3
All households ^{3/} ..	9.2	7.4	2.5	4.4	4.1	2.7	6.1
Rural farm:							
Under \$2,000	2.2	1.1	.3	.1	.5	.7	1.5
Under \$1,000	1.6	1.3	0	0	.5	.3	.5
\$1,000 - \$1,999 ..	2.9	.9	.6	.3	.6	1.1	2.6
\$2,000 - \$2,999 ...	4.4	2.6	.4	1.1	1.5	1.5	4.1
\$3,000 - \$3,999 ...	7.9	4.4	1.8	.9	3.1	1.8	1.3
\$4,000 - \$4,999 ...	8.0	.5	1.1	1.1	1.6	2.7	4.8
\$5,000 - \$5,999 ...	10.9	4.0	3.0	1.0	5.0	4.0	2.0
\$6,000 - \$7,999 ...	12.2	3.1	1.0	3.1	4.1	2.0	11.2
\$8,000 - \$9,999 ...	7.7	5.1	2.6	0	5.1	0	5.1
\$10,000 and over ...	21.7	4.3	4.3	4.3	0	0	4.3
All households ^{3/} ..	5.6	2.4	.8	.8	1.7	1.4	3.1

^{1/} Housekeeping households of 2 or more persons.

^{2/} Family money income (after income taxes), 1954.

^{3/} Includes 1-person housekeeping households and households of 2 or more persons not reporting income.

Table 31.--Selected fresh fruits and vegetables: Percent of households using purchased products, by urbanization and income, in a week in spring (April-June), United States, 1955 ^{1/}

Urbanization and income class ^{2/}	Peas	Spinach	Snap and wax beans	Corn	Broccoli	Strawberries
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Urban:						
Under \$2,000	3.6	8.9	27.7	15.2	2.7	12.5
\$2,000 - \$2,999	5.6	9.0	27.3	13.9	4.1	11.2
\$3,000 - \$3,999	4.7	10.6	21.7	18.4	6.9	14.4
\$4,000 - \$4,999	3.7	8.6	21.1	16.6	7.2	16.0
\$5,000 - \$5,999	4.3	11.3	23.3	21.7	6.0	21.0
\$6,000 - \$7,999	3.3	13.3	18.6	19.8	6.2	23.3
\$8,000 - \$9,999	4.3	12.0	14.5	13.7	12.8	24.8
\$10,000 and over	9.2	6.3	26.1	16.2	7.0	33.8
All households ^{3/}	4.6	9.7	22.1	16.7	6.2	17.9
Rural nonfarm:						
Under \$2,000	2.2	.9	9.0	2.2	0	5.8
\$2,000 - \$2,999	3.9	2.6	14.8	9.7	0	8.4
\$3,000 - \$3,999	4.6	2.8	13.9	6.9	1.4	13.0
\$4,000 - \$4,999	3.2	4.2	14.3	10.1	2.6	11.6
\$5,000 - \$5,999	0	8.0	10.7	4.5	1.8	17.0
\$6,000 - \$7,999	4.3	5.3	10.6	11.7	4.3	17.0
\$8,000 - \$9,999	0	8.0	16.0	8.0	4.0	4.0
\$10,000 and over	0	4.3	8.7	8.7	0	34.8
All households ^{3/}	2.9	3.7	12.2	7.5	1.5	12.0
Rural farm:						
Under \$2,000 .....	.7	.5	3.8	2.2	.3	4.5
Under \$1,000 .....	.3	.3	2.6	2.4	0	4.2
\$1,000 - \$1,999	1.1	.9	5.1	2.0	.6	4.9
\$2,000 - \$2,999 .....	.4	1.1	3.7	1.9	1.9	7.0
\$3,000 - \$3,999	1.3	.9	4.4	3.1	1.3	9.2
\$4,000 - \$4,999 .....	.5	2.7	7.4	4.3	1.1	9.6
\$5,000 - \$5,999	1.0	3.0	9.9	3.0	0	16.8
\$6,000 - \$7,999	1.0	1.0	2.0	7.1	1.0	9.2
\$8,000 - \$9,999	0	2.6	5.1	0	0	15.4
\$10,000 and over	4.3	13.0	4.3	13.0	0	21.7
All households ^{3/} .....	.7	1.2	4.3	3.0	.9	7.5

^{1/} Housekeeping households of 2 or more persons. Includes foods originally brought into the household in fresh form during an earlier period and home-frozen or canned.

^{2/} Family money income (after income taxes), 1954.

^{3/} Includes 1-person housekeeping households and households of 2 or more persons not reporting income.

Unpublished data from 1955 Household Food Consumption Survey, USDA.

Table 32.--Selected commercially canned fruits and vegetables: Percent of households using purchased products, by urbanization and income, in a week in spring (April-June), United States, 1955 1/ 2/

Urbanization and income class <u>3/</u>	Peas	Lima beans	Snap and wax beans	Corn	Berries <u>4/</u>
	Percent	Percent	Percent	Percent	Percent
Urban:					
Under \$2,000	24.1	6.7	15.6	21.0	1.3
\$2,000 - \$2,999	36.3	4.9	21.7	27.7	3.0
\$3,000 - \$3,999	34.8	7.1	26.0	33.6	5.2
\$4,000 - \$4,999	37.1	4.9	27.5	31.4	4.3
\$5,000 - \$5,999	36.7	6.7	33.0	33.7	4.0
\$6,000 - \$7,999	34.3	4.1	27.8	30.5	5.0
\$8,000 - \$9,999	34.2	3.4	34.2	29.1	4.3
\$10,000 and over	24.6	3.5	20.4	22.5	6.3
All households <u>5/</u>	32.5	4.8	25.0	28.2	3.8
Rural nonfarm:					
Under \$2,000	20.2	3.1	12.1	21.5	2.7
\$2,000 - \$2,999	31.0	6.5	24.5	33.5	3.9
\$3,000 - \$3,999	39.4	7.4	25.0	43.1	4.6
\$4,000 - \$4,999	33.3	7.4	28.0	37.0	5.3
\$5,000 - \$5,999	44.6	4.5	33.0	42.9	7.1
\$6,000 - \$7,999	40.4	6.4	23.4	45.7	7.4
\$8,000 - \$9,999	32.0	20.0	16.0	24.0	0
\$10,000 and over	52.2	8.7	26.1	43.5	13.0
All households <u>5/</u>	32.2	6.0	22.0	34.0	4.4
Rural farm:					
Under \$2,000	20.6	3.7	10.4	23.2	1.0
Under \$1,000	16.2	2.1	8.6	18.8	.3
\$1,000 - \$1,999	25.4	5.4	12.3	28.0	1.7
\$2,000 - \$2,999	31.5	5.2	17.8	27.4	2.6
\$3,000 - \$3,999	30.7	4.4	20.6	32.0	4.4
\$4,000 - \$4,999	39.4	3.2	21.3	36.7	2.7
\$5,000 - \$5,999	41.6	4.0	23.8	36.6	3.0
\$6,000 - \$7,999	41.8	7.1	30.6	38.8	5.1
\$8,000 - \$9,999	51.3	2.6	20.5	28.2	2.6
\$10,000 and over	52.2	4.3	8.7	39.1	13.0
All households <u>5/</u>	29.0	3.9	16.4	27.3	2.4

1/ Housekeeping households of 2 or more persons.

2/ Excludes baby or junior foods.

3/ Family money income (after income taxes) 1954.

4/ All berries.

5/ Includes 1-person housekeeping households and households of 2 or more persons not reporting incomes.

Unpublished data from 1955 Household Food Consumption Survey, USDA.

Home Food Production

The extent to which fruits and vegetables are produced at home and canned or frozen at home plays an important role in the differences in family purchase rates for commercially frozen foods which were attributed to "urbanization." How extensive is home production of fresh fruits and vegetables? An indication may be obtained from table 33 which shows the percentage of all urban, rural nonfarm, and farm housekeeping households using selected home-produced vegetables in fresh form during the entire year 1954.

Obviously, only a small percentage of all urban families produced these vegetables at home. Snap beans (8.9 percent) appear to have been the favored vegetable for home production (of the products under study). Among rural nonfarm and farm families, however, home production becomes increasingly important. For example, over 60 percent of rural households reported usage, during 1954, of home-produced fresh peas, snap beans, and sweet corn.

Households that used these home-produced fresh foods tended to use them in significant quantities. It would appear that such families must obtain a sizable portion of their entire usage of these individual vegetables from home production. Average usage by rural households tended to exceed that of their urban counterparts.

Data were shown by regions to indicate the extent of variations among regions as to home production of these vegetables. Home production in the West appears to be notably below the levels reported in other areas.

Home Freezing and Canning

An indication of the proportions of families engaged in home freezing and canning operations during 1954, and the relative importance of such food production to these families, is shown in table 34. These data are for all housekeeping households in the United States, by urbanization group. Similar data by regions are available in tables 53 to 56.

Around 37 percent of rural farm households were engaged in home freezing of vegetables in 1954. Almost 31 percent of these households reported freezing fruits or berries during this period. An even greater portion of rural farm households performed home canning operations. Almost 3 out of 4 rural farm families reported vegetable canning, and almost as many (69.6 percent) canned fruits in one or another form.

Important, but lesser, portions of rural nonfarm households engaged in home processing of these foods. The percentage of rural nonfarm households having home-frozen or home-canned fruits or vegetables was about midway between the high levels observed for the rural farm group and the low levels among urban households.

Table 33.--Households using selected home-produced vegetables in fresh form: Percentage of these households using each vegetable and average quantity per household, by urbanization and region, 1954 ^{1/}

Product and region	Urban		Rural nonfarm		Rural farm	
	Households	Average quantity per household	Households	Average quantity per household	Households	Average quantity per household
		Percent		Pounds		Percent	Pounds	Percent	Pounds
Green peas:						
Northeast	2.7	19.6	25.1	25.2	64.2	26.3
North Central	3.0	13.3	20.1	18.3	56.7	24.6
South	6.0	34.5	28.4	55.6	68.2	69.4
West	3.8	17.6	13.8	18.3	30.4	23.4
United States	3.8	24.5	23.8	36.7	60.7	47.6
Lima beans:						
Northeast	1.4	28.6	17.0	28.2	43.0	33.2
North Central	1.2	22.5	8.9	28.4	19.8	31.0
South	5.3	50.4	22.2	61.0	51.4	77.8
West	0	--	.9	7.8	2.7	14.8
United States	2.1	41.4	15.1	46.4	35.1	62.3
Snap beans:						
Northeast	7.8	15.8	42.8	15.7	82.4	18.4
North Central	10.2	11.8	42.7	15.7	75.9	19.6
South	9.3	15.0	41.0	37.1	72.3	33.6
West	7.9	9.5	19.3	17.7	41.2	14.7
United States	8.9	13.5	40.0	24.1	72.3	25.6
Spinach:						
Northeast	1.1	14.6	6.7	9.6	24.9	9.4
North Central	1.0	8.0	5.0	9.6	16.8	8.9
South	1.2	4.2	2.6	16.5	7.7	17.7
West	2.2	8.6	1.8	8.9	12.8	6.6
United States	1.2	9.2	4.2	10.7	13.2	11.1
Broccoli:						
Northeast	1.0	17.0	3.5	12.6	6.2	21.3
North Central	0	--	1.4	25.0	3.7	15.4
South .....	.1	7.9	.7	32.9	1.4	12.1
West	0	--	.9	63.3	3.4	17.9
United States .....	.4	10.0	1.6	21.9	2.9	16.6
Cut corn:						
Northeast	3.5	80.0	31.8	114.5	79.3	137.7
North Central	4.4	78.9	33.0	109.5	69.5	122.4
South	5.0	96.0	30.4	154.4	57.2	154.6
West	3.6	33.3	6.4	64.5	41.9	100.6
United States	4.1	78.0	29.3	127.4	62.8	136.5
Asparagus:						
Northeast .....	.7	28.6	7.8	25.6	31.1	40.9
North Central	1.3	20.8	9.2	23.9	23.2	31.3
South .....	.6	11.7	1.1	24.6	3.4	50.9
West	1.1	18.2	.9	14.4	6.8	37.2
United States .....	.9	22.2	5.1	24.9	13.8	35.7

^{1/} Housekeeping households of 1 or more persons. Household Food Consumption Survey, 1955 (23, table 12).

Table 34.--Households freezing and canning selected fruits and vegetables: Percentage of these households processing each kind and average quantity processed, by urbanization, United States, 1954 ^{1/}

Method of processing and product	Urban			Rural nonfarm			Rural farm		
	Households	Average quantity per household	Percent	Households	Average quantity per household	Percent	Households	Average quantity per household	Percent
Freezing:									
All vegetables ^{2/}	14.4	43.1		15.1	55.0		37.1	68.7	
Greens	.7	11.6		2.0	22.8		6.4	15.2	
Beans	2.3	23.7		9.7	25.3		23.1	28.9	
Peas	1.4	20.8		6.9	19.0		21.8	22.6	
Cut corn	2.6	27.9		9.0	31.2		27.6	35.8	
Other vegetables	1.1	15.0		3.8	22.3		8.8	24.8	
All fruits	3.7	45.6		11.7	40.1		30.7	45.7	
Peaches	1.6	34.7		4.8	37.0		15.0	32.4	
Berries	2.6	29.7		8.7	25.6		22.6	27.8	
Other fruits	1.3	26.5		3.0	22.5		10.3	27.8	
Canning:									
All vegetables ^{3/}	15.1	42.4		46.5	59.7		73.9	77.7	
Greens	.7	28.7		5.2	15.9		10.4	17.4	
Beans	5.4	22.6		25.4	29.2		47.3	32.8	
Peas	1.0	11.4		7.4	14.8		17.5	22.2	
Cut corn	1.5	15.1		11.0	19.0		22.4	23.1	
Vegetable soups, mixes	.8	17.0		5.0	16.8		10.0	17.7	
Other vegetables	3.7	13.8		12.2	16.0		21.6	20.4	
All fruits ^{4/}	17.3	34.2		42.2	47.0		69.6	63.9	
Peaches ^{4/}	12.3	25.8		34.4	33.5		58.6	39.9	
Berries ^{4/}	3.8	13.6		14.5	18.8		25.9	24.6	
Other fruits ^{4/}	9.7	23.1		20.5	27.5		36.6	40.3	

^{1/} Housekeeping households of 1 or more persons. ^{2/} Includes small quantities of tomatoes and vegetable soup mixes not shown separately. ^{3/} Excludes pickles and relishes (not tomatoes). Includes tomatoes, tomato juice, and relishes. ^{4/} Excludes jellies, jams, preserves, and fruit butters. Household Food Consumption Survey, 1955 (22, table 2).

Although the proportions of urban and rural (nonfarm and farm) households varied widely, average quantities of individual fruits or vegetables processed by these households tended toward uniformity. It would appear that if households engaged in such home food production, they tended to produce sizable and generally similar quantities.

Looking at total home processing of all fruits or vegetables, however, quantities produced by rural families tended to exceed considerably the average volumes produced by urban families. This indicates that rural families home-processed a greater number of foods.

Importance of Home Food Production to Home Canning and Freezing

To what extent is home canning and freezing limited to fruits or vegetables produced at home? Table 35 shows that most households freezing or canning vegetables produced all of their raw product at home. In contrast, a smaller percentage of households engaged in freezing or canning of fruits used only home-produced items.

Raw products for home freezing or canning operations, for most households, appear to have been obtained either entirely from home production or completely from other sources. A relatively small percentage of households obtained products from both home and nonhome sources. Fruits for canning by rural farm households constitute the leading exception, but over 55 percent of these households used fruits from home or from other sources in entirety.

Any trends or patterns in home production, home canning, or home freezing of fruits or vegetables are of importance in evaluating potential demand for commercially frozen fruits or vegetables. The magnitude of home food production and processing activities would cause this factor to be listed high among those affecting purchase rates for commercially frozen fruits and vegetables.

SOME IMPLICATIONS OF THE STUDY

In conception and development, this report has aimed toward analyzing information useful in evaluating the potential impact of changes in usage of frozen fruits and vegetables upon the producer and marketer of fruits and vegetables. It has been concerned with the major intermediate question: What future changes in usage might be expected to occur? Emphasis has been placed upon creating a working tool which will permit more effective projection of future demand for frozen fruits and vegetables.

The report is primarily a collection of evidence on the demand for frozen fruits and vegetables at the family or household level during 1955. Data for individual factors affecting demand have been segregated. However, information for a single year, with basic differences in type of data available for different phases of the overall question, did not lend itself to multifactor statistical formulations. Nevertheless, the general patterns which emerged from these

Table 35.--Households freezing and canning fruits and vegetables: Percentage of these households processing each item, and percentage distribution of households processing home-produced items, by urbanization, United States, 1943 ^{1/}

Method of processing, product, and urbanization	Households	Households using following proportions of home-produced items for processing					Total
		None	Less than half	More than half	All	Percent	
	Percent	Percent	Percent	Percent	Percent	Percent	
Freezing:							
Fruits:							
Urban	3.7	72.1	7.7	3.8	16.3	100.0	
Rural nonfarm	11.7	48.3	4.2	6.3	41.3	100.0	
Rural farm	30.7	33.3	11.5	12.5	42.6	100.0	
Vegetables:							
Urban	4.4	15.6	8.9	0	75.6	100.0	
Rural nonfarm	15.1	22.8	4.9	2.2	70.1	100.0	
Rural farm	37.1	5.1	3.1	6.9	84.9	100.0	
Canning:							
Fruits: ^{2/}							
Urban	25.2	68.5	9.2	4.6	17.6	100.0	
Rural nonfarm	55.1	46.4	16.8	10.3	26.6	100.0	
Rural farm	81.1	21.9	25.3	18.9	33.9	100.0	
Vegetables: ^{3/}							
Urban	16.8	51.9	3.4	7.6	37.2	100.0	
Rural nonfarm	49.1	22.2	4.5	12.7	60.7	100.0	
Rural farm	77.4	4.3	3.5	11.8	80.4	100.0	

^{1/} Housekeeping households of 1 or more persons.

^{2/} All fruits and berries canned, including jams, jellies, preserves, and butters.

^{3/} All vegetables canned, including pickles, relishes, and juices.

data bore strong implications as to potential changes in demand for many frozen fruits and vegetables.

Some of the implications of this study are treated more specifically in three categories--implications as to (1) future demand for frozen fruits and vegetables, (2) potential changes in marketing, and (3) direction of further research in this area.

Demand

The past decade has witnessed an important expansion of the market for frozen fruits and vegetables. A continuation of present economic trends and population growth would appear to insure further expansion. Since population is growing currently at around 1.5 percent per year, market expansion would probably exceed this rate. It must be pointed out, however, that other factors--economic and noneconomic--may exert future influence, either upward or downward, upon demand.

Where might further market expansion take place? It would appear that increasing demand may result from a rise both in the number of families buying and in the average quantities which they purchase.

Number of Buyers

Population growth may constitute the most important single factor in increasing the number of buyers. However, rising family incomes also would play an important role. Among rural families, particularly, income level appears to be related strongly to the percentage of families purchasing these products. Higher incomes for urban families would be expected, likewise, to bring most families into the market, although to a lesser degree. Among urban dwellers, effect of income upon numbers of purchasers would be greatest when such changes occurred in the lower income levels; whereas, among rural families, effects might be expected from rises in income for families in all income categories.

Population shifts off-farm and increasing degree of urbanization also would tend to bring more families into the market over the long term. As pointed out, the percentage of urban families purchasing in each income category tends to exceed the portion of rural families buying these products.

Limited numbers of families might enter the market as a result of increased availability of frozen fruits and vegetables and ownership of home freezer and refrigeration facilities. These combined factors may be expected to exert more influence upon overall quantities purchased, however, than upon numbers of new buyers.

These basic factors--income, urbanization, variations in availability of products and of storage facilities--explain only a part of the disparity existing among regions as to percentages of families purchasing. A change toward

greater uniformity in regional buying habits could be a significant source of new buyers. If the purchasing levels found in the Northeastern and Western regions (after adjustment for income and urbanization factors) were attained in other areas a major increase in the number of purchasing families would result.

There would appear to be possibilities for expansion of the market for frozen fruits and vegetables to include more urban and rural families in each income category. However, a comparison of data for 1952 and 1955 indicates clearly that expansion during recent years has been limited. The question, "What brings a new buyer into the market?" warrants attention in evaluation of promotional and pricing policies.

Quantities Purchased

During recent years increases in average purchases by buyers of frozen fruits and vegetables appear to have constituted the source of most of the market expansion occurring within this period. Increased purchases by buyers may well continue to be a major element of market expansion.

For most frozen fruits and vegetables, average quantities purchased during 1955 were relatively low. Purchases were infrequent and the number of packages of individual frozen products bought per transaction were few. The data indicate that most purchasers only buy for a single meal at a time. Thus, current buyers represent a potential source of future market expansion.

Further information as to consumer characteristics may signal the extent of potential expansion in this area. Further knowledge as to the distribution of buyers in relation to the size of their annual purchases would indicate whether or not there was a saturation point and to what extent this had been reached.

To a lesser degree, information about the chronological pattern of family purchases would be of use in analyzing the market for these products. Do buyers tend to expand their purchases over time? Is there any evidence that a stable purchasing pattern is attained, and, if so, when does this occur?

Price is another of the factors which determine average quantities purchased. In addition to the general price analysis, pricing and its relation to multiunit purchasing may also warrant consideration. Further information as to price relationships for these products is a key to evaluation of possible market expansion in the direction of enlarging purchases.

Postwar economic trends form a basis for expecting at least moderate increases in demand for these frozen products, through larger numbers of buyers and through larger purchases by existing buyers. We appear to be dealing with a relatively stable marketing pattern. However, as purchase rates are low, shifts in demand may result from changes in merchandising methods and promotional activities. Detailed knowledge of the consumer and his purchasing habits may provide the key to possible changes in this area.

Production and Marketing

Current family purchase rates for frozen fruits and vegetables bear numerous economic implications to the producers and marketers of these products. The most obvious are concerned with evaluation of potential levels of demand. More subtle are implications to the marketing structure arising from the limited size of individual family purchases.

Among urban families during 1955 average annual purchases per family member (including buyers and nonbuyers) of frozen peas were about 1.4 pounds. Allowing for seasonal variations in purchasing, monthly purchases may not greatly exceed 0.15 pound per person, even in peak months. For most other frozen fruits and vegetables, and among the rural population, average purchase rates would fall considerably below the levels indicated for frozen green peas. Thus, it is evident that total monthly family purchases of a single frozen product--even in a metropolitan area--will constitute few tons of merchandise.

Trade sources indicate that retailers and distributors of frozen foods have aimed toward increasing sales velocity. Inventory turnovers within 3 to 6 weeks reportedly are not unusual at these stages of marketing. Frequent shipments of frozen foods are required.

Transportation costs are minimized through use of full carlot or trucklot shipments. Full rail carlot shipments, in many cases, are based upon 60,000-pound minimum weights. For motortrucks, minimum weight requirements of 24,000 to 40,000 pounds are listed often on motortruck tariffs.

Wholesalers, retailers, and consumers desire small quantities of individual products at frequent intervals (and these volumes are subdivided further by brand, quality, and package size), yet the unit of minimum-cost shipment is large. Here are the elements of a distribution problem which bears important implications to producers and processors of frozen fruits and vegetables as to location of processing activities, and extent of plant specialization.

Location of Processing Activities

An increase in family purchase rates would be expected to result in a concurrent rise in the quantities of individual frozen fruits and vegetables which could be handled in a single shipment. Over the long term, these changes would be reflected in trends toward more product specialization in freezing activities and more direct shipments from production areas to ultimate consumption areas.

Plant specialization has been limited primarily to large-volume items, such as peas or strawberries, or a combination of several large- or intermediate-volume items which jointly may be fed into the marketing system with minimum transportation and distribution costs. Greater demand would be expected to increase the numbers of products which would be subject to fully or partially

specialized freezing operations. Also, it would reduce the degree to which output from specialized plants is tied to a distribution pattern involving storage at a centralized point for effective carlot assembly. Areas of potential location of processing activities would be expanded, and processors could specialize in individual commodities even more.

Factors other than transportation and handling costs will be involved, however. These include production scheduling required to maintain operating seasons of desired length, homogeneous quality and other product attributes found in a single processing area, availability of processing and storage facilities--to list a few. Any trend toward greater processing specialization will be greatly influenced by such considerations.

APPENDIX

Regions on which data from 1955 Household Food Consumption Survey are based comprise the following States:

Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey.

North Central: Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Iowa, Missouri.

South: Delaware, Maryland, West Virginia, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma, Texas.

West: California, Oregon, Washington, Idaho, Montana, Wyoming, Utah, Colorado, Nevada, Arizona, New Mexico.

Regional data from the National Consumer Panel (MRCA) are based on the following:

Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Maryland, Delaware, District of Columbia. 42/

East North Central: Ohio, Indiana, Michigan, Illinois, Wisconsin.

West North Central: Minnesota, North Dakota, South Dakota, Nebraska, Kansas, Iowa, Missouri.

Southeast: Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi. 42/

42/ Note inclusion of Maryland, Delaware and District of Columbia in Northeast, to obtain comparability with 1952 data (3).

APPENDIX--Continued

West South Central: Arkansas, Louisiana, Oklahoma, Texas.

West: California, Oregon, Washington, Idaho, Montana, Wyoming, Utah, Colorado, Nevada, Arizona, New Mexico.

Table 36.--Ten frozen fruits and vegetables: Percent of families purchasing, by region and United States, 1955

Frozen product	Region						United States
	East	West	West	West	West	West	
	North	North	South	South	Central	Central	
	Central	Central	Central	Central	Central	Central	
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Vegetables:							
Green peas	53	45	41	30	29	65	45
Lima beans	42	32	22	39	26	42	36
Spinach	38	22	15	18	20	31	26
Snap beans	38	23	17	17	11	40	27
Broccoli	39	32	28	29	24	38	33
Cut corn	24	22	23	16	17	33	22
Asparagus	24	13	8	7	2	16	16
Fruits and berries:							
Strawberries	52	51	50	38	37	38	45
Other berries	14	16	18	6	4	17	12
Peaches	8	7	5	10	8	6	8

Table 37.--Ten frozen fruits and vegetables: Average purchases per family, by region and United States, 1955

Frozen product	Region						United States
	East	West	West	West	West	West	
	Northeast	North	North	South	South	West	
	Central	Central	Central	Central	Central		
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Vegetables:							
Green peas	5.7	2.9	2.5	2.2	1.2	5.9	3.7
Lima beans	3.0	1.6	.8	3.5	1.1	1.8	2.1
Spinach	3.2	1.5	.7	1.4	1.2	1.7	1.8
Snap beans	3.0	1.5	.7	1.0	.6	2.3	1.7
Broccoli	2.5	1.3	1.2	1.6	1.1	1.6	1.7
Cut corn	1.0	.9	1.2	.6	.9	1.5	1.0
Asparagus .....	.7	.3	.2	.1	<u>1/</u>	.3	.3
Fruits and berries:							
Strawberries	3.3	3.2	2.7	2.1	1.6	1.5	2.5
Other berries .....	.3	.5	.6	.1	.1	.5	.3
Peaches .....	.2	.2	.3	.3	.3	.2	.2

1/ Less than 0.05 pound.

Table 38.--Ten frozen fruits and vegetables: Average purchases per family member, by region and United States, 1955

Frozen product	Region						United States
	East	West	West	West	West	West	
	Northeast	North	North	South	South	West	
	Central	Central	Central	Central	Central		
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Vegetables:							
Green peas	1.78	0.89	0.83	0.58	0.36	2.00	1.13
Lima beans .....	.76	.50	.25	.92	.33	.61	.64
Spinach .....	.99	.47	.23	.37	.35	.57	.56
Snap beans .....	.92	.45	.22	.25	.16	.79	.52
Broccoli .....	.77	.38	.38	.42	.31	.54	.50
Cut corn .....	.32	.29	.40	.17	.26	.50	.30
Asparagus .....	.20	.10	.05	.04	.02	.11	.10
Fruits and berries:							
Strawberries	1.04	.97	.90	.54	.46	.50	.77
Other berries .....	.10	.14	.19	.02	.02	.16	.10
Peaches .....	.07	.07	.10	.07	.07	.05	.07

Table 39.--Ten frozen fruits and vegetables: Average purchases per buying family, by region and United States, 1955

Frozen product	Region							United States
	: Northeast	: East	: West	: South	: West	: West	:	
	: Central	: Central	: Central	: Central	: Central	:		
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	
Vegetables:								
Green peas	10.9	6.4	6.2	7.4	4.3	9.1	8.3	
Lima beans	5.9	5.1	3.5	8.9	4.3	4.3	5.9	
Spinach	8.3	7.2	4.7	7.6	6.2	5.4	7.2	
Snap beans	7.8	6.3	4.0	5.6	4.8	5.8	6.5	
Broccoli	6.3	4.0	4.1	5.4	4.5	4.2	5.0	
Cut corn	4.4	4.2	5.2	4.1	5.2	4.5	4.5	
Asparagus	2.8	2.5	2.0	2.0	1.7	2.0	2.0	
Fruits and berries:								
Strawberries	6.5	6.2	5.5	5.4	4.3	3.9	5.6	
Other berries	2.2	2.9	3.2	1.4	2.3	2.8	2.6	
Peaches	2.7	3.2	5.7	2.6	3.5	2.6	3.0	

Table 40.--Ten frozen fruits and vegetables: Average purchases per member of buying families, by region and United States, 1955

Frozen product	Region							United States
	: Northeast	: East	: West	: South	: West	: West	:	
	: Central	: Central	: Central	: Central	: Central	:		
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	
Vegetables:								
Green peas	3.5	2.1	2.1	2.2	1.4	3.1	2.7	
Lima beans	1.9	1.6	1.3	2.6	1.5	1.5	1.9	
Spinach	2.7	2.2	1.6	2.4	2.0	1.8	2.3	
Snap beans	2.5	1.9	1.5	1.6	1.5	1.9	2.1	
Broccoli	2.0	1.3	1.4	1.7	1.4	1.4	1.6	
Cut corn	1.3	1.2	1.7	1.2	1.6	1.4	1.4	
Asparagus .....	.9	.8	.6	.6	.6	.6	.8
Fruits and berries:								
Strawberries	2.0	1.9	1.7	1.6	1.4	1.4	1.8	
Other berries .....	.7	.9	1.2	.5	.9	1.0	.9
Peaches .....	.9	1.1	1.6	.9	1.2	.9	1.0

Table 41.--Ten frozen fruits and vegetables: Percent of urban and rural families purchasing, by region and United States, 1955

Urbanization and frozen product	Region						United States
	North- East	North- Central	West- Central	South	West- South	West	
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Urban families:							
Vegetables:							
Green peas	54	50	46	42	35	69	51
Lima beans	43	37	25	56	33	46	42
Spinach	41	25	21	29	26	35	32
Snap beans	41	29	23	26	14	46	33
Broccoli	41	36	39	43	31	43	40
Cut corn	24	26	28	22	21	35	26
Asparagus	26	16	10	11	2	16	17
Fruits and berries:							
Strawberries	53	59	56	52	45	39	51
Other berries	14	19	19	10	4	18	14
Peaches	9	8	7	15	13	6	9
Rural families:							
Vegetables:							
Green peas	45	29	32	14	20	52	27
Lima beans	27	15	16	19	16	28	19
Spinach	15	9	5	5	10	15	8
Snap beans	17	5	8	6	8	18	9
Broccoli	26	16	12	12	13	21	15
Cut corn	18	10	16	9	11	26	13
Asparagus	10	4	4	2	3	14	5
Fruits and berries:							
Strawberries	44	24	41	21	24	33	28
Other berries	10	7	16	1	4	14	6
Peaches	5	2	2	4	2	4	3

Table 42.--Ten frozen fruits and vegetables: Percent of urban families purchasing, by income class and region, 1955

Income class and frozen product	East	West		West	
	Northeast	North	North	South	South
	Central	Central		Central	West
	Percent	Percent	Percent	Percent	Percent
Over \$5,000:					
Green peas	53	48	44	48	36
Lima beans	44	36	25	62	32
Spinach	43	31	23	32	24
Snap beans	41	23	28	32	18
Broccoli	41	40	40	52	37
Cut corn	24	25	30	23	20
Asparagus	27	20	11	<u>1/</u>	3
Strawberries	53	62	53	56	42
Other berries ...	16	20	21	12	4
Peaches	8	9	11	17	<u>1/</u>
					8
\$3,000 to \$5,000:					
Green peas	62	57	64	51	45
Lima beans	46	43	32	61	52
Spinach	46	20	24	34	38
Snap beans	46	25	23	27	19
Broccoli	47	37	48	47	38
Cut corn	28	31	33	24	22
Asparagus	25	14	9	13	2
Strawberries	64	66	79	57	64
Other berries ...	16	19	17	11	<u>2/</u>
Peaches	9	7	5	16	15
					6
Under \$3,000:					
Green peas	38	38	25	26	24
Lima beans	35	27	16	44	16
Spinach	29	18	12	20	18
Snap beans	30	20	14	18	5
Broccoli	29	23	23	28	18
Cut corn	16	18	16	17	21
Asparagus	24	4	<u>1/</u>	7	2
Strawberries	30	37	30	42	31
Other berries ...	6	14	18	5	3
Peaches	<u>1/</u>	<u>1/</u>	2	12	10
					3

1/ Combined with \$3,000-\$5,000 category because of insufficient numbers.

2/ Combined with \$5,000 category because of insufficient numbers.

Table 43.--Ten frozen fruits and vegetables: Percent of rural families purchasing, by income class and region, 1955

Income class and frozen product	East	West		West	
	Northeast	North	North	South	South
	Central	Central	Central	Central	West
	Percent	Percent	Percent	Percent	Percent
Over \$5,000:					
Green peas	48	36	42	26	32
Lima beans	40	22	18	35	46
Spinach	34	8	8	4	21
Snap beans	26	2	10	7	14
Broccoli	51	24	23	33	21
Cut corn	34	6	21	13	14
Asparagus	23	8	8	<u>1/</u>	4
Strawberries	34	34	52	38	57
Other berries ...	6	12	23	2	2
Peaches	11	4	5	7	<u>1/</u>
\$3,000 to \$5,000:					
Green peas	43	29	47	15	29
Lima beans	25	12	20	24	17
Spinach	9	12	4	8	10
Snap beans	16	5	9	9	16
Broccoli	14	12	7	16	19
Cut corn	14	17	20	12	19
Asparagus	7	3	3	2	4
Strawberries	54	17	56	25	27
Other berries ...	16	5	20	2	<u>2/</u>
Peaches	3	2	2	7	2
Under \$3,000:					
Green peas	46	21	17	10	11
Lima beans	19	12	12	11	5
Spinach	8	6	5	3	5
Snap beans	11	8	5	4	2
Broccoli	22	12	9	5	7
Cut corn	11	8	10	6	5
Asparagus	3	2	<u>1/</u>	1	2
Strawberries	38	23	23	14	11
Other berries ...	5	4	9	1	6
Peaches	<u>1/</u>	<u>1/</u>	1	1	1

1/ Combined with \$3,000-\$5,000 category because of insufficient numbers.
2/ Combined with over \$5,000 category because of insufficient numbers.

Table 44.--Ten frozen fruits and vegetables: Average purchases per urban and rural buying family, by region and United States, 1955

Urbanization and frozen product	Region						United States
	North-east	North	West	South	West	West	
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Urban families:							
Vegetables:							
Green peas	11.1	6.7	6.7	7.8	4.3	9.5	8.7
Lima beans	6.1	5.1	4.1	9.0	4.4	4.4	6.0
Spinach	8.3	7.5	5.0	8.0	6.5	5.6	7.4
Snap beans	7.9	6.5	4.6	6.2	5.5	5.7	6.7
Broccoli	6.5	4.0	4.0	5.5	4.9	4.1	5.1
Cut corn	4.4	4.2	5.4	3.9	5.9	4.6	4.5
Asparagus	2.8	2.4	2.1	2.0	2.4	1.9	2.5
Fruits and berries:							
Strawberries	6.4	6.4	5.7	5.7	4.1	3.8	6.4
Other berries	2.1	3.0	3.5	1.4	3.5	3.3	2.6
Peaches	2.6	2.8	5.9	2.7	3.2	2.3	2.9
Rural families:							
Vegetables:							
Green peas	8.7	4.9	5.1	5.8	4.3	7.1	6.1
Lima beans	3.9	5.5	2.2	8.4	4.1	3.5	5.3
Spinach	8.7	3.6	3.0	4.9	4.9	4.1	5.1
Snap beans	7.2	4.0	1.4	2.1	3.0	6.8	4.4
Broccoli	3.9	3.7	4.8	5.1	2.8	4.8	4.3
Cut corn	4.0	4.4	4.6	4.6	3.1	4.0	4.2
Asparagus	2.6	3.5	1.6	1.8	.7	2.6	2.4
Fruits and berries:							
Strawberries	6.9	4.3	4.9	4.6	4.8	4.4	5.0
Other berries	3.4	1.6	2.6	1.7	.6	2.0	2.2
Peaches	3.2	8.4	4.7	2.4	7.4	4.1	4.1

Table 45.--Ten frozen fruits and vegetables: Average purchases per urban buying family, by income class and region, 1955

Income class and frozen product	Region							United States
	Northeast	East North Central	West North Central	South	West South Central	West		
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	
\$5,000 and over:								
Green peas	14.4	8.1	8.4	8.4	6.5	10.4	10.7	
Lima beans	7.6	5.5	4.5	10.0	5.6	4.9	6.8	
Spinach	8.4	7.7	6.5	9.0	12.5	6.1	8.0	
Snap beans	10.6	7.4	5.3	6.8	6.7	6.5	8.1	
Broccoli	7.7	4.4	5.4	5.3	5.7	4.7	5.7	
Cut corn	5.6	5.5	4.9	4.1	9.6	5.1	5.4	
Asparagus	3.3	2.6	2.6	<u>1/</u>	1.6	2.0	<u>3/2.8</u>	
Strawberries	7.1	6.7	6.3	6.1	4.6	3.6	6.2	
Other berries	2.2	3.7	3.7	1.8	4.3	2.8	<u>3/2.9</u>	
Peaches	3.5	3.7	2.6	2.4	<u>1/</u>	2.1	<u>3/3.0</u>	
\$3,000 to \$5,000:								
Green peas	8.6	5.6	5.1	7.8	3.0	7.6	7.2	
Lima beans	4.9	3.6	3.7	9.5	3.3	3.5	5.1	
Spinach	7.9	8.6	3.4	7.4	4.6	5.0	6.9	
Snap beans	6.1	5.8	4.5	5.8	5.1	4.3	5.5	
Broccoli	5.3	3.5	2.8	5.8	4.6	3.6	4.6	
Cut corn	3.7	3.0	6.9	3.9	4.0	3.8	3.9	
Asparagus	2.3	1.9	1.7	2.2	4.7	1.9	<u>3/2.2</u>	
Strawberries	6.1	6.1	4.8	5.2	3.6	3.8	5.4	
Other berries	1.9	2.5	3.4	1.2	<u>2/</u>	3.1	<u>3/2.3</u>	
Peaches	2.1	1.6	12.0	3.6	3.1	2.5	<u>3/2.8</u>	
Under \$3,000:								
Green peas	8.4	4.2	7.0	6.7	2.9	11.8	7.5	
Lima beans	4.8	8.2	4.2	6.8	5.4	5.4	6.0	
Spinach	9.1	4.0	4.3	7.4	2.1	5.5	6.5	
Snap beans	4.8	3.3	2.1	5.7	2.8	6.8	5.0	
Broccoli	5.9	3.6	3.3	5.2	4.0	3.4	4.6	
Cut corn	2.7	2.4	3.0	3.9	4.2	4.9	3.5	
Asparagus	2.3	3.4	<u>1/</u>	1.2	2.0	1.6	2.0	
Strawberries	5.2	5.9	7.2	5.7	4.4	4.4	5.4	
Other berries	2.6	1.3	3.4	1.0	1.7	3.3	<u>3/2.3</u>	
Peaches	<u>1/</u>	<u>1/</u>	17.8	1.7	3.4	2.8	<u>3/3.1</u>	

1/ Combined with \$3,000-\$5,000 category because of insufficient data.
2/ Combined with over \$5,000 category because of insufficient data.
3/ Averages are subject to adjustments reported in footnotes 1 and 2.

Table 46.--Ten frozen fruits and vegetables: Average purchases per rural buying family, by income class and region, 1955

Income class and frozen product	Region						United States
	Northeast	East North Central	West North Central	South	West South Central	West	
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
\$5,000 and over:							
Green peas	8.4	4.8	5.4	7.2	5.4	9.1	6.9
Lima beans	4.8	5.6	2.5	6.1	3.3	4.9	4.8
Spinach	7.8	6.7	4.3	15.5	5.1	6.2	7.0
Snap beans	10.1	20.9	1.5	2.4	3.5	7.8	6.9
Broccoli	3.4	3.3	4.8	3.2	4.2	4.7	3.8
Cut corn	4.8	2.5	4.8	5.0	5.0	5.9	5.0
Asparagus	2.5	3.7	1.5	<u>1</u> / ₂	1.0	2.7	<u>3</u> / ₂ 6
Strawberries	8.8	5.7	6.1	4.6	4.4	4.7	5.5
Other berries	5.6	2.1	3.7	2.7	.4	3.3	<u>3</u> / ₃ 1
Peaches	1.7	8.4	6.2	3.6	<u>1</u> / ₂	7.3	<u>3</u> / ₅ 0
\$3,000 to \$5,000:							
Green peas	11.2	6.3	4.2	5.3	5.0	6.5	6.6
Lima beans	3.7	6.9	1.6	8.1	3.4	2.7	5.1
Spinach	9.6	2.1	1.7	3.0	5.6	3.5	4.1
Snap beans	6.4	1.3	1.0	2.3	2.6	5.6	3.6
Broccoli	4.5	4.7	4.0	4.9	2.5	4.8	4.4
Cut corn	3.3	4.6	5.7	3.2	2.2	4.3	3.9
Asparagus	2.7	4.9	1.7	1.4	.8	2.0	<u>3</u> / ₂ 2
Strawberries	7.5	5.0	4.7	4.8	5.7	4.6	5.5
Other berries	2.3	.5	1.7	.8	<u>2</u> / ₂	2.6	<u>3</u> / ₁ 9
Peaches	4.9	8.4	2.2	1.2	5.8	2.7	<u>3</u> / ₃ 4
Under \$3,000:							
Green peas	5.3	3.0	6.3	5.2	2.3	4.9	4.7
Lima beans	2.7	3.8	2.6	10.6	8.2	2.4	6.4
Spinach	10.3	2.8	2.6	3.9	3.8	1.5	3.8
Snap beans	3.5	1.5	1.7	1.7	3.8	5.9	2.7
Broccoli	4.3	3.4	5.3	8.7	1.7	4.7	5.0
Cut corn	3.4	5.3	2.9	6.0	2.9	1.5	3.7
Asparagus	3.7	.4	<u>1</u> / ₂	2.4	.4	3.0	<u>3</u> / ₂ 0
Strawberries	4.3	1.7	3.8	4.4	4.7	3.8	3.8
Other berries	6.0	1.5	2.5	2.2	.6	.7	<u>3</u> / ₁ 8
Peaches	<u>1</u> / ₂	<u>1</u> / ₂	4.0	4.5	10.6	.2	<u>3</u> / ₁

1/ Combined with \$3,000-\$5,000 category because of insufficient data.
2/ Combined with over \$5,000 category because of insufficient data.
3/ Averages are subject to adjustments reported in footnotes 1 and 2.

Table 47.--Index of quarterly family purchases: Ten frozen fruits and vegetables, by region and United States, 1955 ¹/₂ (Quarterly average of annual purchases = 100)

Frozen product and quarter	Region					United States
	North-east	East North Central	West North Central	South	West South Central	
	Percent	Percent	Percent	Percent	Percent	Percent
Green peas:						
1	107	110	102	111	120	110
2	102	103	101	109	114	102
3	80	84	85	85	77	87
4	111	103	95	95	89	101
Lima beans:						
1	108	111	119	105	117	115
2	96	110	104	113	99	93
3	92	82	83	81	98	91
4	104	97	94	101	86	101
Spinach:						
1	115	115	115	96	105	115
2	92	88	85	100	103	93
3	92	92	109	92	96	82
4	101	105	91	112	96	110
Snap beans:						
1	107	119	111	129	96	104
2	110	105	107	95	109	100
3	79	63	84	77	72	80
4	104	113	98	99	123	116
Broccoli:						
1	117	129	104	97	116	112
2	94	89	109	99	90	85
3	88	73	79	93	74	92
4	101	109	108	111	120	111
Cut corn:						
1	116	114	123	122	125	113
2	108	103	88	102	137	109
3	73	71	92	81	81	79
4	103	106	97	95	57	99

See footnote at end of table.

Table 47.--Index of quarterly family purchases: Ten frozen fruits and vegetables, by region and United States, 1955 1/4--Continued
(Quarterly average of annual purchases = 100)

	Region															
	Northeast			East North : West North			South			West South			West		United States	
	Percent	Central	Percent	Central	Percent	Central	Percent	Central	Percent	Central	Percent	Central	Percent	Central	Percent	
Asparagus:																
1	129	147	82	109	107	102	144	121	127							
2	65	65	139	101	106	116	50	82	75							
3	76	80	75	90	85	82	124	88	80							
4	130	108	104	100	102	100	82	109	118							
Total, 7 vegetables:																
1	111	116	109	109	107	111	115	111	111							
2	99	100	101	101	106	107	107	98	101							
3	84	79	90	90	85	85	84	86	84							
4	106	105	100	100	102	102	94	105	104							
Strawberries:																
1	110	106	103	103	94	94	103	116	106							
2	131	112	162	162	128	128	144	111	128							
3	71	90	75	75	103	103	91	96	85							
4	88	92	60	60	75	75	62	77	81							
Other berries:																
1	117	67	74	74	98	98	88	69	83							
2	126	101	145	145	125	125	81	82	111							
3	88	129	113	113	108	108	209	122	116							
4	69	103	68	68	74	74	22	127	90							
Peaches:																
1	141	117	101	101	124	124	125	109	123							
2	149	142	129	129	114	114	121	146	134							
3	59	90	68	68	107	107	112	72	84							
4	51	51	102	102	55	55	42	73	59							
Total, 3 fruits:																
1	113	101	98	98	98	98	106	105	104							
2	131	112	156	156	127	127	138	107	127							
3	72	95	81	81	103	103	99	100	89							
4	84	92	65	65	72	72	57	88	80							

1/ Ratios of purchases during quarter to quarterly averages of annual purchases (quarters based upon calendar year).

Table 48.--Selected fruits and vegetables: Percent of households using, by form, in a week in spring (April-June), 1955 1/

Commodity, form, and type of urbanization	Region				United States
	Northeast	North Central	South	West	
Green peas:	Percent	Percent	Percent	Percent	Percent
Frozen:					
Urban	14.0	14.1	8.2	21.9	13.7
Rural nonfarm	15.8	7.2	4.1	20.0	9.2
Rural farm	13.0	6.2	2.2	14.0	5.6
Fresh: <u>2/</u>					
Urban	6.5	2.8	9.4	6.1	6.0
Rural nonfarm	9.6	9.7	12.6	4.5	10.3
Rural farm	1.0	.1	1.2	.7	.7
Canned:					
Urban	30.6	37.0	31.2	29.6	32.5
Rural nonfarm	34.4	34.3	28.1	40.0	32.5
Rural farm	31.6	38.1	18.3	46.0	29.1
Lima beans: <u>3/</u>					
Frozen:					
Urban	9.3	6.5	11.7	7.1	8.8
Rural nonfarm	11.0	3.9	8.5	5.5	7.4
Rural farm	4.7	2.0	2.5	.7	2.4
Canned:					
Urban	3.5	4.0	9.5	1.6	4.8
Rural nonfarm	5.2	5.2	8.5	.9	6.1
Rural farm	1.0	3.1	5.7	2.0	4.0
Beans, snap and wax:					
Frozen:					
Urban	9.9	9.3	2.0	8.7	7.6
Rural nonfarm	4.4	3.9	1.3	1.8	4.4
Rural farm	2.6	.7	.3	4.0	.9
Fresh: <u>2/</u>					
Urban	26.7	21.2	39.4	10.6	26.0
Rural nonfarm	7.2	5.8	22.4	3.6	12.2
Rural farm	2.1	2.1	7.0	2.0	4.3
Canned:					
Urban	22.6	29.0	17.1	37.5	25.1
Rural nonfarm	21.3	28.7	13.9	40.0	22.4
Rural farm	7.8	20.2	10.7	44.7	16.5
Spinach: <u>4/</u>					
Frozen:					
Urban	8.1	7.9	2.9	8.4	6.8
Rural nonfarm	5.5	.8	1.3	4.5	2.5
Rural farm	1.6	1.1	.6	.7	.8
Fresh: <u>2/</u>					
Urban	17.3	7.8	4.7	8.4	10.2
Rural nonfarm	12.4	2.5	2.2	6.4	5.1
Rural farm	1.6	.5	.7	8.0	1.2

See footnotes at end of table.

--Continued

Table 48.--Selected fruits and vegetables: Percent of households using, by form, in a week in spring (April-June), 1955 1/--Continued

Commodity, form, and type of urbanization	Region				United States
	Northeast	North Central	South	West	
	Percent	Percent	Percent	Percent	Percent
Broccoli:					
Frozen:					
Urban	12.9	8.4	8.3	9.2	10.0
Rural nonfarm	5.2	4.7	3.5	2.7	4.2
Rural farm	1.3	1.3	1.8	4.7	1.7
Fresh: <u>2</u> /					
Urban	11.1	5.9	1.0	6.1	6.4
Rural nonfarm	3.4	2.5	.4	2.7	2.0
Rural farm	1.0	1.1	.4	3.3	.9
Corn:					
Frozen:					
Urban	3.4	4.9	3.3	6.1	4.2
Rural nonfarm	3.4	2.5	1.7	5.5	2.7
Rural farm	2.1	2.0	.7	2.7	1.4
Fresh: <u>2</u> /					
Urban	15.8	15.4	27.1	14.5	18.3
Rural nonfarm	3.1	3.6	13.3	8.2	7.5
Rural farm	1.6	1.5	4.4	4.7	3.0
Canned:					
Urban	22.3	35.3	27.6	28.2	28.2
Rural nonfarm	34.4	40.1	27.2	42.7	34.1
Rural farm	14.0	32.6	23.1	44.0	27.4
All fruits (other than citrus):					
Frozen:					
Urban	11.5	13.8	9.8	8.7	11.4
Rural nonfarm	13.7	6.6	5.0	9.1	7.9
Rural farm	4.1	4.4	2.8	3.3	3.5
Fresh: <u>2</u> /					
Urban	85.4	87.5	73.7	92.3	84.1
Rural nonfarm	79.0	78.5	64.1	80.0	73.3
Rural farm	79.3	78.8	54.5	82.7	84.9
Canned:					
Urban	54.9	64.9	46.9	66.0	57.4
Rural nonfarm	52.9	50.3	39.7	56.4	47.5
Rural farm	36.3	43.4	34.0	50.7	39.0

1/ Fresh--rural farm data for purchased only. All sources are included in urban and rural nonfarm data.

2/ Includes items brought into the household in a fresh form but used in a home-canned or home-frozen form.

3/ Data for canned not available.

4/ Data for fresh not available.

Table 49.--Ten frozen fruits and vegetables: Average size of buying and nonbuying families, by income, urbanization, and region, 1955 ^{1/}

Frozen product, urbanization, and region	: Number of persons in average family, by income ^{2/}					
	: Under \$3,000		: \$3,000-\$5,000		: Over \$5,000	
	: Buying	: Non- : buying	: Buying	: Non- : buying	: Buying	: Non- : buying
Green peas:						
Urban:						
Northeast	2.60	2.66	3.59	3.93	3.61	3.98
East North Central	2.15	2.76	3.64	3.95	3.65	4.06
West North Central	1.82	2.51	3.38	3.72	3.41	4.00
Southeast	2.84	3.98	3.56	4.23	3.71	4.21
West South Central	2.60	3.61	3.69	3.86	3.52	3.73
West	2.05	2.54	2.91	3.87	3.27	3.86
Rural:						
Northeast	2.59	3.67	3.29	3.44	3.71	4.47
East North Central	2.45	3.14	4.16	4.48	3.56	3.84
West North Central	2.31	2.92	3.32	4.19	3.75	4.95
Southeast	2.44	4.26	3.38	4.27	4.08	4.67
West South Central	2.64	3.74	3.33	4.36	<u>3/</u>	4.15
West	3.50	3.58	3.27	4.59	3.41	4.30
Lima beans:						
Urban:						
Northeast	2.62	2.65	3.40	3.96	3.64	3.92
East North Central	2.53	2.53	3.48	3.96	3.62	4.01
West North Central	<u>3/</u>	2.44	3.14	3.70	3.32	3.90
Southeast	3.00	4.11	3.38	4.38	3.79	4.24
West South Central	2.40	3.58	3.23	3.97	3.14	3.85
West	2.00	2.49	2.91	3.73	3.26	3.74
Rural:						
Northeast	<u>3/</u>	3.44	3.43	3.90	3.71	4.06
East North Central	<u>3/</u>	3.06	<u>3/</u>	4.47	3.73	3.77
West North Central	<u>3/</u>	2.98	3.00	4.08	3.14	4.82
Southeast	2.80	4.25	3.88	4.11	3.56	4.79
West South Central	<u>3/</u>	3.72	<u>3/</u>	4.35	3.23	4.12
West	<u>3/</u>	3.56	2.62	4.55	2.92	4.26
Snap beans:						
Urban:						
Northeast	2.49	2.71	3.56	3.90	3.59	3.93
East North Central	2.07	2.64	3.59	4.28	3.89	3.90
West North Central	<u>3/</u>	2.36	2.87	3.71	<u>3/</u>	4.03
Southeast	2.65	3.94	3.79	4.09	3.80	4.11
West South Central	<u>3/</u>	3.51	3.55	3.86	3.31	3.73
West	1.88	2.51	3.16	3.65	3.34	3.71
Rural:						
Northeast	<u>3/</u>	3.33	<u>3/</u>	3.95	<u>3/</u>	3.95
East North Central	<u>3/</u>	3.06	<u>3/</u>	4.53	<u>3/</u>	3.79
West North Central	<u>3/</u>	2.86	<u>3/</u>	3.94	<u>3/</u>	4.71
Southeast	<u>3/</u>	4.20	4.10	4.20	<u>3/</u>	4.60
West South Central	<u>3/</u>	3.69	<u>3/</u>	2.83	<u>3/</u>	3.97
West	<u>3/</u>	3.57	<u>3/</u>	4.39	3.30	4.17

See footnotes at end of table.

--Continued

Table 49.--Ten frozen fruits and vegetables: Average size of buying and nonbuying families, by income, urbanization, and region, 1955 1/--Continued

Frozen product, urbanization, and region	Number of persons in average family, by income ^{2/}					
	Under \$3,000		\$3,000-\$5,000		Over \$5,000	
	Buying	Non- buying	Buying	Non- buying	Buying	Non- buying
Spinach:						
Urban:						
Northeast	2.49	2.70	3.57	3.90	3.59	3.94
East North Central	2.00	2.64	3.56	3.90	3.79	3.93
West North Central	3/	2.44	3.50	3.61	3.26	3.90
Southeast	2.67	4.19	3.89	4.21	3.00	4.64
West South Central	2.27	3.60	3.36	3.91	3.64	3.67
West	1.96	2.49	3.17	3.61	3.41	3.65
Rural:						
Northeast	3/	3.38	3/	3.84	3.75	4.04
East North Central	3/	3.08	3/	4.39	3/	3.84
West North Central	3/	2.83	3/	3.99	3/	4.64
Southeast	3/	3.94	3/	4.23	3/	4.21
West South Central	3/	3.70	3/	4.21	3/	4.04
West	3/	3.66	3/	4.27	3/	4.12
Broccoli:						
Urban:						
Northeast	2.70	2.61	3.60	3.89	3.60	3.93
East North Central	1.69	2.77	3.61	3.92	3.61	4.03
West North Central	2.20	2.39	3.62	3.59	3.25	4.05
Southeast	2.70	4.03	3.30	4.31	3.51	4.35
West South Central	3.00	3.53	3.09	3.95	3.32	5.12
West	2.00	2.50	3.06	3.65	3.20	3.77
Rural:						
Northeast	3/	3.48	3/	3.90	3.83	4.04
East North Central	3/	3.15	3/	4.49	3.00	3.92
West North Central	3/	2.88	3/	4.00	3/	4.85
Southeast	3/	4.20	3.47	4.27	3.13	4.85
West South Central	3/	3.71	3.40	4.28	3/	4.05
West	3/	3.59	3/	4.32	3.64	4.13
Cut corn:						
Urban:						
Northeast	3.05	2.56	3.50	3.88	4.04	3.74
East North Central	2.31	2.58	3.93	3.86	3.97	3.88
West North Central	3/	2.41	3.36	3.65	3.53	3.86
Southeast	3.00	3.88	3.50	4.13	4.12	4.02
West South Central	2.54	3.59	3.92	3.83	3.22	3.75
West	1.83	2.48	3.25	3.59	3.33	3.69
Rural:						
Northeast	3/	3.33	3/	3.87	4.00	3.98
East North Central	3/	3.06	3.55	4.54	3/	3.81
West North Central	3/	2.86	3.91	3.95	3/	4.77
Southeast	2.70	4.21	3.08	4.28	3/	4.61
West South Central	3/	3.67	3.40	4.28	3/	4.04
West	3/	3.44	3.90	4.34	3.20	4.18

See footnotes at end of table.

--Continued

Table 49.--Ten frozen fruits and vegetables: Average size of buying and nonbuying families, by income, urbanization, and region, 1955 1--Continued

Frozen product, urbanization, and region	: Number of persons in average family, by income <u>2</u>					
	: Under \$3,000		: \$3,000-\$5,000		: Over \$5,000	
	: Buying	: Non- : buying	: Buying	: Non- : buying	: Buying	: Non- : buying
Asparagus:						
Urban:						
Northeast	2.87	2.57	3.41	3.88	3.63	3.86
East North Central	1.33	2.58	<u>3</u> / ₄	3.88	3.59	3.96
West North Central	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	3.18	3.84
Southeast	<u>3</u> / ₄	3.83	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄
West South Central	<u>3</u> / ₄	3.50	<u>3</u> / ₄	3.85	<u>3</u> / ₄	3.66
West	2.15	2.42	3.56	3.54	3.16	3.66
Rural:						
Northeast	<u>3</u> / ₄	3.33	<u>3</u> / ₄	3.86	<u>3</u> / ₄	3.97
East North Central	<u>3</u> / ₄	3.01	<u>3</u> / ₄	4.40	<u>3</u> / ₄	3.88
West North Central	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	4.66
Southeast	<u>3</u> / ₄	4.17	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄
West South Central	<u>3</u> / ₄	3.67	<u>3</u> / ₄	4.21	<u>3</u> / ₄	3.99
West	<u>3</u> / ₄	3.56	<u>3</u> / ₄	4.34	<u>3</u> / ₄	4.08
Strawberries:						
Urban:						
Northeast	2.47	2.71	3.64	3.91	3.77	3.84
East North Central	2.50	2.54	3.62	3.97	3.71	2.57
West North Central	2.23	2.40	3.52	3.66	3.55	3.97
Southeast	2.65	4.22	3.43	5.63	3.82	4.19
West South Central	2.32	3.70	3.41	3.96	3.39	3.81
West	2.11	2.46	2.90	3.71	3.22	3.71
Rural:						
Northeast	3.07	3.39	3.57	3.95	3.58	4.07
East North Central	2.67	3.11	4.09	4.45	3.53	3.84
West North Central	2.39	2.94	4.10	3.86	3.65	5.14
Southeast	3.80	4.19	3.26	4.35	3.65	4.10
West South Central	2.82	3.73	2.93	4.44	3.56	4.08
West	<u>3</u> / ₄	3.71	3.27	4.48	3.00	4.26
Other berries:						
Urban:						
Northeast	<u>3</u> / ₄	2.68	3.47	3.85	3.54	3.85
East North Central	2.40	2.55	3.38	3.91	3.53	3.97
West North Central	<u>3</u> / ₄	2.48	2.55	3.71	2.81	3.99
Southeast	<u>3</u> / ₄	3.84	2.77	4.13	3.71	4.07
West South Central	<u>3</u> / ₄	3.70	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄
West	1.82	2.44	2.76	3.61	3.12	3.66
Rural:						
Northeast	<u>3</u> / ₄	3.38	<u>3</u> / ₄	3.91	<u>3</u> / ₄	3.86
East North Central	<u>3</u> / ₄	3.08	<u>3</u> / ₄	4.28	<u>3</u> / ₄	3.87
West North Central	<u>3</u> / ₄	3.03	4.09	3.92	<u>3</u> / ₄	4.77
Southeast	<u>3</u> / ₄	4.17	<u>3</u> / ₄	4.21	<u>3</u> / ₄	4.60
West South Central	<u>3</u> / ₄	3.50	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄	<u>4</u> / ₄
West	<u>3</u> / ₄	3.65	<u>3</u> / ₄	4.43	<u>3</u> / ₄	4.54

See footnotes at end of table.

--Continued

Table 49.--Ten frozen fruits and vegetables: Average size of buying and nonbuying families, by income, urbanization, and region, 1955 ^{1/}

Frozen product, urbanization, and region	: Number of persons in average family, by income ^{2/}					
	: Under \$3,000		: \$3,000-\$5,000		: Over \$5,000	
	: Buying	: Non- : buying	: Buying	: Non- : buying	: Buying	: Non- : buying
Peaches:	:	:	:	:	:	:
Urban:	:	:	:	:	:	:
Northeast	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>	3.37	3.84
East North Central	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>	3.29	3.94
West North Central	<u>3/</u>	2.32	<u>3/</u>	3.60	3.91	3.76
Southeast	2.45	3.90	3.00	4.15	3.00	4.18
West South Central	<u>3/</u>	3.53	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>
West	<u>3/</u>	2.40	<u>3/</u>	3.56	2.94	3.63
Rural:	:	:	:	:	:	:
Northeast	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>3/</u>	4.00
East North Central	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>3/</u>	3.77
West North Central	<u>3/</u>	2.83	<u>3/</u>	3.95	<u>3/</u>	4.57
Southeast	<u>3/</u>	4.17	<u>3/</u>	4.21	<u>3/</u>	4.65
West South Central	<u>3/</u>	3.61	<u>4/</u>	<u>4/</u>	<u>4/</u>	<u>4/</u>
West	<u>3/</u>	3.51	<u>3/</u>	4.31	<u>3/</u>	4.06

^{1/} Based upon nonprojected data. Families are housekeeping households of 1 or more persons.

^{2/} Net family income before income taxes and other deductions, 1954.

^{3/} Averages not reported for less than 10 families.

^{4/} Data for 2 income levels combined.

Table 50.--Percentage of households having regular access to freezing facilities, 1/ by urbanization and income, 4 regions and United States, 1954

Size and urbanization of households and income after income taxes	Region				United States
	Northeast	North Central	South	West	
	Percent	Percent	Percent	Percent	Percent
All households	13.7	30.0	18.2	28.5	21.6
1-person households	1.8	10.1	3.3	9.8	5.9
Households of 2 or more persons <u>2/</u>	14.8	31.5	19.6	30.5	23.1
Under \$2,000	16.9	37.5	17.8	34.6	23.1
\$2,000 - \$2,999	18.1	30.1	15.3	22.4	20.2
\$3,000 - \$3,999	13.9	31.9	16.5	28.7	21.3
\$4,000 - \$4,999	11.4	28.7	20.6	28.0	21.4
\$5,000 - \$5,999	12.7	26.8	25.0	37.0	23.1
\$6,000 - \$7,999	18.0	27.5	28.1	41.0	26.1
\$8,000 - \$9,999	21.0	26.5	30.1	20.9	24.7
\$10,000 and over	24.4	51.4	36.8	21.3	39.6
All urban households	7.1	16.3	9.6	20.9	12.2
1-person households	1.3	4.5	2.8	9.7	3.9
Households of 2 or more persons <u>2/</u>	7.6	17.4	10.3	22.2	13.1
Under \$2,000	2.2	12.2	5.2	15.0	6.7
\$2,000 - \$2,999	2.8	3.6	5.5	10.0	4.9
\$3,000 - \$3,999	6.8	10.6	5.6	19.2	8.8
\$4,000 - \$4,999	5.1	17.0	10.3	22.8	12.3
\$5,000 - \$5,999	6.7	18.6	14.0	29.2	15.3
\$6,000 - \$7,999	13.1	19.4	25.1	33.3	20.2
\$8,000 - \$9,999	14.3	17.8	21.1	11.1	16.3
\$10,000 and over	19.5	45.1	<u>3/</u>	29.1	34.5
All rural nonfarm households	24.4	34.2	18.9	38.2	26.5
1-person households	0	16.2	2.9	<u>3/</u>	7.2
Households of 2 or more persons <u>2/</u>	25.9	36.3	20.2	41.2	28.2
Under \$2,000	22.6	26.6	13.6	<u>3/</u>	18.8
\$2,000 - \$2,999	37.5	27.8	18.6]	37.2	26.5
\$3,000 - \$3,999	23.4	49.1	22.7]		32.0
\$4,000 - \$4,999	27.4	34.3	25.5]	39.9	29.7
\$5,000 - \$5,999	23.8	29.3	36.0]		31.2
\$6,000 - \$7,999	<u>4/</u> 31.8	<u>4/</u> 41.3	<u>4/</u> 28.6	<u>3/</u>	32.9
\$8,000 - \$9,999	--	--	--	--	36.0
\$10,000 and over	--	--	--	--	56.5
All rural farm households	76.7	81.8	43.1	77.3	63.4
1-person households	<u>3/</u>	40.0	12.0	<u>3/</u>	31.3
Households of 2 or more persons <u>2/</u>	76.7	82.9	44.0	78.8	64.4
Under \$2,000	60.8	70.5	35.7	80.1	48.1
\$2,000 - \$2,999	82.7	90.6	42.6]	63.3	67.0
\$3,000 - \$3,999	87.6	86.6	56.1]		72.8
\$4,000 - \$4,999	72.3	88.4	76.1]	85.2	83.0
\$5,000 - \$5,999	<u>3/</u>	80.7	68.0]		78.3
\$6,000 - \$7,999	<u>4/</u> 100.0	<u>4/</u> 91.8	<u>4/</u> 70.2	<u>4/</u> 95.0	82.6
\$8,000 - \$9,999	--	--	--	--	97.5
\$10,000 and over	--	--	--	--	95.7

1/ Through possession of freezer or rental of locker or regular access to someone else's freezer. 2/ Includes households not classified by income. 3/ Percentages not shown for less than 15 households. 4/ Incomes \$6,000 and over.

Table 51.--Percentage of households having freezers, by urbanization and income, 4 regions and United States, 1954

Size and urbanization of households and income after income taxes	Region				United States
	Northeast	North Central	South	West	
	Percent	Percent	Percent	Percent	Percent
All households	9.8	18.8	10.9	15.6	13.4
1-person households	1.3	6.0	2.0	6.4	3.6
Households of 2 or more persons ^{1/}	10.2	19.8	11.7	16.6	14.3
Under \$2,000	12.7	17.1	8.8	21.3	12.0
\$2,000 - \$2,999	8.4	17.8	7.3	3.5	9.7
\$3,000 - \$3,999	8.3	15.2	12.3	11.3	11.8
\$4,000 - \$4,999	7.5	17.0	11.2	11.6	12.1
\$5,000 - \$5,999	9.3	16.2	13.3	18.5	13.6
\$6,000 - \$7,999	14.6	19.4	19.5	27.3	18.8
\$8,000 - \$9,999	15.6	22.8	21.3	18.7	19.9
\$10,000 and over	19.6	42.0	25.0	29.4	32.2
All urban households	4.7	12.1	5.4	12.7	8.1
1-person households	1.3	4.5	1.4	7.3	3.1
Households of 2 or more persons ^{1/}	5.0	12.8	5.9	13.3	8.6
Under \$2,000	2.2	9.8	2.6	10.0	4.5
\$2,000 - \$2,999	1.4	1.8	2.8	0	1.9
\$3,000 - \$3,999	2.7	4.8	4.8	6.4	4.3
\$4,000 - \$4,999	1.7	9.4	2.3	10.6	5.5
\$5,000 - \$5,999	5.7	13.4	4.0	14.6	9.3
\$6,000 - \$7,999	10.3	13.2	16.7	23.8	14.2
\$8,000 - \$9,999	11.4	17.8	10.5	11.1	13.7
\$10,000 and over	16.7	41.9	2/	25.9	30.3
All rural nonfarm households	16.5	18.5	11.1	15.5	15.0
1-person households	0	5.4	2.9	2/	3.1
Households of 2 or more persons ^{1/}	17.5	20.0	11.8	16.7	16.0
Under \$2,000	12.9	8.2	5.3	2/	7.6
\$2,000 - \$2,999	12.5	16.7	5.7]	14.0	9.7
\$3,000 - \$3,999	17.0	20.3	15.5]		17.6
\$4,000 - \$4,999	23.5	23.4	16.4]		19.6
\$5,000 - \$5,999	14.3	11.7	24.0]	9.9	16.1
\$6,000 - \$7,999	3/25.0	3/25.8	3/25.0	3/	24.4
\$8,000 - \$9,999	--	--	--	--	28.0
\$10,000 and over	--	--	--	--	34.8
All rural farm households	59.6	48.8	27.3	46.0	39.9
1-person households	2/	30.0	4.0	2/	15.8
Households of 2 or more persons ^{1/}	60.3	49.3	28.0	47.9	40.6
Under \$2,000	54.3	32.6	19.3	53.4	26.4
\$2,000 - \$2,999	58.6	53.8	27.1]		40.7
\$3,000 - \$3,999	59.4	50.6	43.9]	18.5	45.6
\$4,000 - \$4,999	50.0	49.6	54.3]		50.0
\$5,000 - \$5,999	2/	48.1	44.0]	58.8	53.5
\$6,000 - \$7,999	3/73.7	3/69.1	3/51.3	3/65.0	60.2
\$8,000 - \$9,999	--	--	--	--	74.4
\$10,000 and over	--	--	--	--	69.6

^{1/} Includes households not classified by income.
^{2/} Percentages not shown for less than 15 households.
^{3/} Incomes \$6,000 and over.

Table 52.--Percentage of households having mechanical refrigeration, by urbanization, size of household, and region, 1954

Size and urbanization of households	Region				United States
	Northeast	North Central	South	West	
	Percent	Percent	Percent	Percent	Percent
All households	95.4	96.4	86.3	93.2	92.7
1-person households ..	91.6	92.4	70.6	88.2	85.0
Households of 2 or more persons	95.7	96.7	87.7	93.7	93.4
All urban households....	95.6	97.4	87.9	92.1	93.7
1-person households ..	92.5	97.0	76.4	87.8	88.4
Households of 2 or more persons	95.8	97.4	89.2	92.6	94.3
All rural nonfarm households	94.5	94.5	83.0	95.5	90.3
1-person households ..	88.2	86.5	58.8	<u>1/</u>	77.1
Households of 2 or more persons	94.9	95.4	84.9	96.1	91.4
All rural farm house- holds	97.4	95.8	87.9	97.3	92.5
1-person households ..	<u>1/</u>	75.0	68.0	<u>1/</u>	75.4
Households of 2 or more persons	97.9	96.3	88.5	97.2	93.0

1/ Percentages not shown for less than 15 households.

Household Food Consumption Survey, 1955 (22, table 3).

Table 53.--Households freezing fruits and vegetables: Percentage of these households freezing each kind and average quantities per household, 1/ by urbanization and region, 1954

Product and region	Urban		Rural nonfarm		Rural farm	
	Households	Quantity per household	Households	Quantity per household	Households	Quantity per household
	Pct.	Lbs.	Pct.	Lbs.	Pct.	Lbs.
All vegetables: <u>2/</u>						
Northeast	2.8	57.2	15.5	65.9	50.8	86.1
North Central	6.5	29.7	18.5	49.3	98.7	51.1
South	3.7	53.3	12.4	54.2	25.5	90.9
West	5.3	47.9	13.6	51.3	31.3	59.3
United States	4.4	43.1	15.1	55.0	37.1	68.7
Greens:						
Northeast .....	.4	3/	3.1	3/	9.3	15.7
North Central .....	.5	3/	1.4	3/	5.4	11.3
South	1.2	3/	1.5	3/	6.7	16.7
West .....	.8	3/	2.7	3/	6.0	3/
United States .....	.7	11.5	2.0	22.8	6.4	15.2
Beans:						
Northeast	1.7	28.6	13.1	23.5	37.8	30.9
North Central	3.0	18.3	11.3	26.7	26.1	21.4
South	2.6	24.3	8.1	25.6	19.9	36.9
West	1.8	3/	2.7	3/	8.7	3/
United States	2.3	23.7	9.7	25.3	23.1	28.9
Peas:						
Northeast .....	.9	3/	9.6	19.8	36.8	22.3
North Central .....	.8	3/	5.8	15.7	22.9	13.6
South	2.7	25.2	6.5	22.3	18.5	32.7
West .....	.4	3/	4.5	3/	17.3	18.4
United States	1.4	20.8	6.9	19.0	21.8	22.6
Sweet corn:						
Northeast	1.7	39.9	9.6	27.6	40.9	38.2
North Central	4.1	23.9	12.4	31.5	38.7	34.1
South	1.3	3/	6.1	30.6	16.3	37.3
West	4.0	22.1	8.2	3/	22.7	38.4
United States	2.6	27.9	9.0	31.2	27.6	35.8

See footnotes at end of table.

--Continued

Table 53.--Households freezing fruits and vegetables: Percentage of these households freezing each kind and average quantities per household, 1/ by urbanization and region, 1954--continued

Product and region	Urban		Rural nonfarm		Rural farm	
	Households	Quantity per household	Households	Quantity per household	Households	Quantity per household
	Pct.	Lbs.	Pct.	Lbs.	Pct.	Lbs.
Other vegetables:						
Northeast	0.3	<u>3/</u>	2.7	<u>3/</u>	17.1	26.2
North Central	1.2	<u>3/</u>	5.2	18.8	8.4	20.4
South	1.3	<u>3/</u>	2.8	<u>3/</u>	7.2	26.5
West	2.4	<u>3/</u>	6.4	<u>3/</u>	10.7	32.8
United States	1.1	15.0	3.8	22.3	8.8	24.8
All fruits:						
Northeast	1.7	58.5	11.7	45.7	45.6	55.6
North Central	5.4	47.9	16.0	35.5	44.4	43.9
South	2.7	29.7	8.1	41.1	15.5	46.9
West	6.3	45.2	12.7	<u>3/</u>	34.0	37.3
United States	3.7	45.6	11.7	40.1	30.7	45.7
Peaches:						
Northeast .....	.8	<u>3/</u>	4.8	<u>3/</u>	20.7	29.2
North Central	2.5	<u>3/</u> 4.4	4.7	32.3	19.5	30.6
South	1.4	<u>3/</u>	5.2	40.4	10.7	36.8
West	2.1	<u>3/</u>	3.6	<u>3/</u>	11.3	29.8
United States	1.6	34.7	4.8	37.0	15.0	32.4

1/ Housekeeping households of 1 or more persons.
2/ Includes small quantities of tomatoes, vegetable soups and mixes.
3/ Averages are not shown for fewer than 15 households.

Household Food Consumption Survey, 1955 (22, table 2).

Table 54.--Proportion of households canning fruits and vegetables, and use of home-produced foods for canning, by urbanization and region, 1954 ^{1/}

Product, urbanization, and region (all households)	Proportion of all households canning	Households canning fruits and vegetables					Total
		Proportion of home-produced foods used					
		None	Less than half	More than half	All		
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	
Fruits: ^{2/}							
Urban:							
Northeast	3/1.7	69.6	11.5	4.7	14.2	100.0	
North Central	3/5.4	69.4	7.9	2.5	20.1	100.0	
South	3/2.7	68.4	4.5	6.8	20.3	100.0	
West	3/6.3	66.0	13.5	6.4	14.1	100.0	
United States	3.7	68.5	9.2	4.6	17.6	100.0	
Rural nonfarm:							
Northeast	48.1	51.4	20.0	8.6	20.0	100.0	
North Central	62.4	44.7	16.8	9.3	29.2	100.0	
South	55.8	41.0	15.2	12.1	31.6	100.0	
West	46.4	66.7	15.7	9.8	7.8	100.0	
United States	55.1	46.4	16.8	10.3	26.6	100.0	
Rural farm:							
Northeast	86.0	26.5	24.7	17.5	31.3	100.0	
North Central	87.1	19.3	34.7	16.7	29.2	100.0	
South	76.2	19.9	16.6	21.9	41.6	100.0	
West	73.3	42.7	25.5	14.5	17.3	100.0	
United States	81.1	21.9	25.3	18.9	33.9	100.0	
Vegetables: ^{4/}							
Urban:							
Northeast	3/2.8	49.0	3.0	7.0	41.0	100.0	
North Central	3/6.5	56.9	3.4	6.9	32.8	100.0	
South	3/3.7	37.2	2.3	12.8	47.7	100.0	
West	3/5.3	58.6	5.2	3.4	32.8	100.0	
United States	4.4	51.9	3.4	7.6	37.2	100.0	
Rural nonfarm:							
Northeast	57.2	25.7	4.6	17.8	52.0	100.0	
North Central	57.7	21.5	4.3	11.5	62.7	100.0	
South	46.0	18.5	3.8	11.4	66.4	100.0	
West	25.5	35.7	10.7	3.6	50.0	100.0	
United States	49.1	22.2	4.5	12.7	60.7	100.0	
Rural farm:							
Northeast	87.0	3.0	2.4	13.1	81.5	100.0	
North Central	84.5	3.0	3.9	11.1	81.9	100.0	
South	73.4	3.9	2.7	11.4	82.0	100.0	
West	54.0	21.0	9.9	17.3	51.9	100.0	
United States	77.4	4.3	3.5	11.8	80.4	100.0	

^{1/} All housekeeping households of 1 or more persons.
^{2/} All fruits and berries canned including jams, jellies, preserves, and butters.
^{3/} Data not published.
^{4/} All vegetables canned including pickles, relishes, and juices.
Household Food Consumption Survey, 1955 (22, tables 2, 4, 5).

Table 55.--Households canning selected fruits and vegetables: Percentage of these households canning each kind and average quantities per household, by urbanization and region, United States, 1954 1/

Product and region	Urban		Rural nonfarm		Rural farm	
	Households	Quantity per household	Households	Quantity per household	Households	Quantity per household
	Pct.	Qts.	Pct.	Qts.	Pct.	Qts.
All vegetables: <u>2/</u>						
Northeast	9.8	53.7	49.1	59.7	85.0	95.2
North Central	25.1	40.4	54.1	49.6	81.0	71.6
South	11.1	42.7	45.1	70.1	69.7	81.7
West	13.5	30.3	20.0	51.4	49.3	55.2
United States	15.1	42.4	46.5	59.7	73.9	77.7
Greens:						
Northeast .....	.7	<u>3/</u>	4.1	<u>3/</u>	11.4	21.3
North Central	1.0	<u>3/</u>	3.6	<u>3/</u>	7.8	16.5
South .....	.7	<u>3/</u>	7.8	18.7	13.5	17.4
West	0	<u>3/</u>	1.8	<u>3/</u>	3.3	<u>3/</u>
United States .....	.7	28.7	5.2	15.9	10.4	17.4
Beans:						
Northeast	3.1	25.3	24.7	24.1	47.1	32.7
North Central	7.7	21.2	22.9	22.7	52.8	27.5
South	6.5	21.6	31.2	35.8	45.7	38.0
West	4.2	25.7	10.9	<u>3/</u>	29.3	31.5
United States	5.4	22.6	25.4	29.2	47.3	32.8
Peas:						
Northeast .....	.3	<u>3/</u>	5.2	11.3	9.3	13.4
North Central .....	.2	<u>3/</u>	5.2	4.8	8.9	12.5
South	2.7	12.1	12.0	19.3	28.5	25.6
West	1.1	<u>3/</u>	.9	<u>3/</u>	5.3	<u>3/</u>
United States	1.0	11.4	7.4	14.8	17.5	22.2
Corn:						
Northeast	1.1	<u>3/</u>	12.0	16.8	34.7	31.7
North Central	2.0	15.4	10.8	18.8	23.3	22.1
South	1.9	<u>3/</u>	13.1	20.6	20.9	20.9
West .....	.8	<u>3/</u>	.9	<u>3/</u>	11.3	23.7
United States	1.5	15.1	11.0	19.0	22.4	23.1

See footnotes at end of table.

--Continued

Table 55.--Households canning selected fruits and vegetables: Percentage of these households canning each kind and average quantities per household, by urbanization and region, United States, 1954 1/--continued

Product and region	Urban		Rural nonfarm		Rural farm	
	Households	Quantity per household	Households	Quantity per household	Households	Quantity per household
	Pct.	Qts.	Pct.	Qts.	Pct.	Qts.
Vegetable soups, mixes:						
Northeast	0.4	3/	3.1	3/	9.3	22.6
North Central .....	.6	3/	2.8	3/	8.1	16.4
South	1.9	3/	8.9	14.2	13.1	17.8
West .....	.3	3/	.9	3/	2.0	3/
United States .....	.8	17.0	5.0	16.8	10.0	17.7
Other:						
Northeast	2.3	16.4	15.1	14.5	32.1	19.1
North Central	6.2	12.6	13.8	14.6	24.8	21.0
South	2.6	15.3	9.8	20.2	18.0	20.7
West	2.7	3/	9.1	3/	14.0	15.4
United States	3.7	13.8	12.2	16.0	21.6	20.4
Fruits: <u>4</u> /						
Northeast	11.2	30.9	40.9	45.1	76.2	67.8
North Central	22.2	31.9	46.7	46.2	79.2	70.3
South	12.1	25.1	40.7	44.6	61.3	50.9
West	31.4	46.9	37.3	67.4	64.0	93.8
United States	17.3	34.2	42.2	47.0	69.6	63.9
Peaches:						
Northeast	8.5	25.9	35.7	35.4	67.9	52.7
North Central	16.0	24.3	39.0	30.8	73.5	38.8
South	7.3	21.4	30.7	34.2	45.0	35.1
West	22.4	30.6	30.9	35.8	54.7	51.3
United States	12.3	25.8	34.4	33.5	58.6	39.9
Berries:						
Northeast	2.3	12.1	12.4	17.0	22.3	23.4
North Central	4.3	14.6	14.9	18.3	22.9	28.1
South	4.7	11.0	16.8	20.2	30.7	23.1
West	5.0	18.0	9.1	3/	16.0	18.9
United States	3.8	13.6	14.5	18.8	25.9	24.6

See footnotes at end of table.

--Continued

Table 55.--Households canning selected fruits and vegetables: Percentage of these households canning each kind and average quantities per household, by urbanization and region, United States, 1954 ^{1/}--continued

Product and region	Urban		Rural nonfarm		Rural farm	
	Households	Quantity per household	Households	Quantity per household	Households	Quantity per household
	Pct.	Qts.	Pct.	Qts.	Pct.	Qts.
Other:						
Northeast	5.4	18.1	16.2	22.7	40.4	26.2
North Central	12.2	20.9	27.1	25.2	44.7	46.4
South	4.7	19.8	16.1	26.5	27.0	30.7
West	23.5	29.7	28.2	44.7	49.3	58.7
United States	9.7	23.1	20.5	27.5	36.6	40.3

^{1/} Housekeeping households of 1 or more persons.

^{2/} Excludes pickles and relishes (not tomatoes). Includes tomatoes, tomato juice, and relishes.

^{3/} Averages not shown for fewer than 15 households.

^{4/} Excludes production of jellies, jams, preserves, and butters.

Household Food Consumption Survey, 1955 (22, table 2).

Table 56.--Proportion of households freezing fruits and vegetables and use of home-produced foods for freezing, by urbanization and region, 1954 ^{1/}

Product, urbanization, and region (all households)	Proportion of all households freezing	Households freezing fruits and vegetables				Total
		Proportion of home-produced foods used				
		None	Less than half	More than half	All	
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Fruits: ^{2/}						
Urban:						
Northeast	16.0	81.3	6.3	0	12.5	100.0
North Central	33.3	77.8	6.7	2.2	13.3	100.0
South	19.1	84.2	5.3	0	10.5	100.0
West	41.2	45.8	12.5	12.5	29.2	100.0
United States	--	72.1	7.7	3.8	16.3	100.0
Rural nonfarm:						
Northeast	11.7	58.8	5.9	2.9	32.4	100.0
North Central	16.0	36.2	1.7	13.8	48.3	100.0
South	8.1	56.8	5.4	0	37.8	100.0
West	12.7	^{3/}	^{3/}	^{3/}	^{3/}	100.0
United States	11.7	48.3	4.2	6.3	41.3	100.0
Rural farm:						
Northeast	45.6	36.4	8.0	13.6	42.0	100.0
North Central	44.4	27.2	12.2	12.8	47.8	100.0
South	15.5	39.0	14.2	11.3	35.5	100.0
West	34.0	52.9	5.9	11.8	29.4	100.0
United States	30.7	32.3	11.5	12.5	42.6	100.0
Vegetables: ^{4/}						
Urban:						
Northeast	10.8	46.2	7.7	3.8	42.3	100.0
North Central	27.8	63.0	3.7	3.6	27.8	100.0
South	12.4	30.8	11.5	11.5	46.2	100.0
West	15.3	65.0	0	10.0	25.0	100.0
United States	--	53.2	5.6	7.1	34.1	100.0
Rural nonfarm:						
Northeast	15.5	15.6	8.9	0	75.6	100.0
North Central	18.5	22.4	4.5	1.5	71.6	100.0
South	12.4	22.8	1.8	3.5	71.9	100.0
West	13.6	46.7	6.7	6.7	40.0	100.0
United States	15.1	22.8	4.9	2.2	70.1	100.0
Rural farm:						
Northeast	50.8	2.0	3.1	6.1	88.8	100.0
North Central	48.7	4.6	1.9	5.2	88.3	100.0
South	25.5	4.3	4.7	7.3	83.6	100.0
West	31.3	19.1	4.3	19.1	57.4	100.0
United States	37.1	5.1	3.1	6.9	84.9	100.0

^{1/} All housekeeping households of 1 or more persons.

^{2/} All fruits and berries.

^{3/} Percentages not shown for fewer than 15 households.

^{4/} All vegetables.

Household Food Consumption Survey, 1955 (22, tables 4 and 5).



LITERATURE CITED

- (1) Badger, H. T.
1954. Preliminary Report of the Quantities of Fruit Used by Pie Bakers.
U. S. Dept. Agr., Agr. Mktg. Serv. November. (Processed)
- (2) _____
1956. The Use of Frozen Foods by Restaurants. Mktg. Res. Rpt. No. 144.
U. S. Dept. Agr., Agr. Mktg. Serv. November.
- (3) Bitting, H. W.
1954. Purchases of Frozen and Canned Foods by Urban Families as Re-
lated to Home Refrigeration Facilities. Mktg. Res. Rpt. No. 60.
U. S. Dept. Agr., Agr. Mktg. Serv. February.
- (4) Burk, M. C., and Lanahan, T. J., Jr.
1958. Use of 1955 Food Survey Data for Research in Agricultural
Economics. Agr. Econ. Res. 10(3): 79-98. U. S. Dept. Agr.
July. (Reprinted as AMS-262, U. S. Dept. Agr., Agr. Mktg.
Serv.)
- (5) Clark, Faith, Murray, Janet, Weiss, G. D., and Grossmann, Evelyn
1954. Food Consumption of Urban Families in the United States With an
Appraisal of Methods of Analysis. Agr. Inform. Bul. No. 132.
U. S. Dept. Agr., Agr. Res. Serv. October.
- (6) Murray, Janet, Blake, E. C., Dickens, Dorothy, and Moser, A. M.
1952. Collection Methods in Dietary Surveys. Southern Cooperative
Series, Bul. No. 23. South Carolina Agr. Expt. Sta. April.
- (7) Reese, R. B.
1956. Survey of Fruit Use by Preserve Manufacturers. Mktg. Res. Rpt.
No. 123. U. S. Dept. Agr., Agr. Mktg. Serv. June.
- (8) _____
1956. Survey of Fruit and Tree Nut Use by Frozen Dessert Manufacturers.
Mktg. Res. Rpt. No. 146. U. S. Dept. Agr., Agr. Mktg. Serv.
December.
- (9) _____
1957. Production of Frozen Prepared Foods, 1954-55. Mktg. Res. Rpt.
No. 170. U. S. Dept. Agr., Agr. Mktg. Serv. May.
- (10) United States Department of Agriculture
1956. Consumer Purchases of Fruits and Juices by Family Characteristics,
April-September 1955. CPFJ-20. Agr. Mktg. Serv. February.
- (11) _____
1956. Availability of Selected Fruits and Juices in Retail Food Stores,
August 1956. CPFJ-32. Agr. Mktg. Serv. October.
- (12) _____
1956. Food Consumption of Households in the United States. Household
Food Consumption Survey 1955, Rpt. No. 1. Agr. Res. Serv. and
Agr. Mktg. Serv. December.
- (13) _____
1956. Food Consumption of Households in the Northeast. Household Food
Consumption Survey 1955, Rpt. No. 2. Agr. Res. Serv. and Agr.
Mktg. Serv. December.



LITERATURE CITED--Continued

- (14)

1956. Food Consumption of Households in the North Central Region. Household Food Consumption Survey 1955, Rpt. No. 3. Agr. Res. Serv. and Agr. Mktg. Serv. December.
- (15)

1956. Food Consumption of Households in the South. Household Food Consumption Survey 1955, Rpt. No. 4. Agr. Res. Serv. and Agr. Mktg. Serv. December.
- (16)

1956. Food Consumption of Households in the West. Household Food Consumption Survey 1955, Rpt. No. 5. Agr. Res. Serv. and Agr. Mktg. Serv. December.
- (17)

1957. Dietary Levels of Households in the United States. Household Food Consumption Survey 1955, Rpt. No. 6. Agr. Res. Serv. and Agr. Mktg. Serv. March.
- (18)

1957. Dietary Levels of Households in the Northeast. Household Food Consumption Survey 1955, Rpt. No. 7. Agr. Res. Serv. and Agr. Mktg. Serv. May.
- (19)

1957. Dietary Levels of Households in the North Central Region. Household Food Consumption Survey 1955, Rpt. No. 8. Agr. Res. Serv. and Agr. Mktg. Serv. May.
- (20)

1957. Dietary Levels of Households in the South. Household Food Consumption Survey 1955, Rpt. No. 9. Agr. Res. Serv. and Agr. Mktg. Serv. May.
- (21)

1957. Dietary Levels of Households in the West. Household Food Consumption Survey 1955, Rpt. No. 10. Agr. Res. Serv. and Agr. Mktg. Serv. July.
- (22)

1957. Home Freezing and Canning by Households in the United States, by Region. Household Food Consumption Survey 1955, Rpt. No. 11. Agr. Res. Serv. and Agr. Mktg. Serv. October.
- (23)

1958. Food Production for Home Use by Households in the United States, by Region. Household Food Consumption Survey 1955, Rpt. No. 12. Agr. Res. Serv. and Agr. Mktg. Serv. January.

